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PREFACE.

In giving to the public a Report of the Proceedings of the British Association for the Advancement of Science, it has been considered an important object to add to the account of the past Meeting a distinct view of what is to be expected from the next, and to announce the result of the applications which have been made to individuals, requesting them, in the name of the Association, to undertake the reports and researches recommended by its Committees in different branches of science.

The success of these applications will appear from the following statement.

REPORTS.

1. The Rev. George Peacock has undertaken to present to the next Meeting, a Report on the recent progress of Mathematical Analysis, in reference particularly to the differential and integral calculus.

2. Professor Airy has undertaken a Report on the state and progress of Astronomical Science, in reference particularly to Physical Astronomy.

3. J. W. Lubbock, Esq. has consented to furnish such information respecting the data and desiderata for calculating the time and height of High-water as he may be able to offer.

4. James D. Forbes, Esq. has undertaken to present a Report on the present state of Meteorological Science.

5. Dr. Brewster has undertaken a Report on the progress of Optical Science.

6. The Rev. Robert Willis has undertaken a Report on the state of our knowledge concerning the Phenomena of Sound, in reference especially to the additions recently made to it.

7. The Rev. Professor Powell has undertaken a similar Report respecting the Phenomena of Heat.

8. The Rev. Professor Cumming has undertaken a Report on Thermo-Electricity and on the allied subjects, in reference to the discoveries recently made in them.

9. James F. W. Johnston, Esq. has undertaken a Report on the recent progress of Chemical Science, especially in foreign countries.

10. The Rev. Professor Whewell has undertaken a Report on the state and progress of Mineralogical Science.

11. Robert Stevenson, Esq. has undertaken the Report recommended by the Geological and Geo-

graphical Committee, on the waste and extension of the land on the east coast of Britain, and on the question of the permanence of the relative level of the sea and land.

12. Professor Lindley has undertaken to give an account of the principal questions recently settled, or still agitated, in the Philosophy of Botany.

RESEARCHES.

There is reason to hope that the earnest wish expressed by the Mathematical and Physical Committee, that a register of the Thermometer, during every hour of the day and night, should be kept at some station in the South of England, will be realized at Plymouth under the superintendence of Mr. Harvey, with the enlightened concurrence of those who have the power of enabling him to render this public service to science.

The law of the decrease of Temperature with increasing elevations in the atmosphere, will be illustrated by a continuation of experiments with balloons by the Earl of Minto.

The Secretaries of the Yorkshire Philosophical Society have commenced the observations recommended, on the comparative quantities of rain falling on the top of York Minster and near its base; and the society has formed a Meteorological Committee, by whose labours other researches, which have been recommended in that branch of science, may be expected to be advanced.

The observations on the intensity of terrestrial Magnetism, proposed by the Mathematical and Physical Committee, have been undertaken by Dr. Traill; and the Royal Society of Edinburgh have lent for his use their standard needle, constructed under the superintendence of Professor Hansteen.

A summary of the observations which Mr. Henwood is making on the electro-magnetic condition of metalliferous veins will be presented to the Meeting, and it is probable that the suggestion of the Committee may be followed, in regard to the extension of these experiments to veins which traverse horizontal and dissimilar strata.

There is reason to expect that the objects contemplated by the Chemical Committee, in recommending a revision of some of the primary data of chemistry, will derive light from the labours of Dr. Prout and Professor Turner, in addition to those of the eminent philosopher from whom the recommendations originated.

Professor Daubeny and Mr. Johnston have undertaken the analytical researches respectively entrusted to them; and specimens of iron in different stages of its manufacture have been transmitted to the latter gentleman from the principal iron works in Yorkshire.

In Geology, the inquiry respecting parallelism in the lines of disturbance of the British strata will receive, it is hoped, the joint consideration of the Rev. Wm. Conybeare and the Rev. Professor Sedgwick.

In Botany, the comprehensive inquiry proposed by the Committee will be illustrated by contributions which Professor Henslow proposes to add to the Flora Cantabrigiensis, and by a systematic catalogue of the native plants of the County of York, which the Sub-curator of the Yorkshire Philosophical Society is preparing for the press.

Lastly, in Zoological research, for which no provision was made at the late meeting, the officers of the Association have received from Dr. Knox the promise of a memoir on the natural history of the Salmon.

It will be observed that the object to which the Committees have in general paid the first attention has been, to procure reports on the state and desiderata of the several branches of science, preliminary to measures which may be hereafter adopted to advance them. To the investigation, however, of a few points of prominent interest and importance they have at once proceeded to invite attention; and of these there are some which it is highly desirable should receive the consideration of experimenters and observers who cannot be individually solicited to take a share in them. Such is the examination of those first data of chemistry, (*Recommendations, p.* 53), which, lying at the very foundation of the science, are proposed to be settled by the common consent of experienced chemists, and to which it is hoped that every one possessing the necessary means and habits of accurate experiment will lend his assistance; such, also, are those meteorological and botanical researches, (*Recommendations*, p. 50, 55), which, belonging to a lower order of facts, are open to a much wider class of observers, and are capable of being extended through all parts of the country by the exertions of individuals, and still more effectually by those of societies.

The nature and value of the aid which Provincial Societies might render to science through the system of the British Association, and the advantages which they may themselves derive from it, have been lately adverted to by the Council of the Yorkshire Philosophical Society in the following manner. *

"The effect of such a system will be not only to give connection to the efforts of insulated inquirers, but to link societies themselves together in unity of purpose, and in a common participation and division of labour. There are many important questions in philosophy, and some whole departments of science, the data of which are *geographically* distributed, and require to be collected by local observations extended over a whole country; and this is true not only of those facts on which single sciences are founded, but of many which are of more enlarged application. Thus, for instance, were the elevation above the sea of all the low levels, and chief heights and eminences, of a country ascertained so generally, that every observer of nature might have a station within his reach from which he could fix the relative position in this respect of whatever might be the object of his research, of how many questions, in how many sciences, would these facts contribute to the solution ? Again, supposing it to be ascertained also, at these stations, what is the temperature of the air, and of the water,—as it falls from the sky, and as it is held in the reservoirs of the earth—these are data of the same kind, interesting not only to meteorological science, but to the philosophy of organized and animated existence. Yet, extensive as might be the importance of such facts, and simple as are the processes for ascertaining them, and numerous as are the individuals capable of contributing to their investigation, how little, nevertheless, even of this elementary work has yet been accomplished, either by insulated observers, or by those who are associated together for the express purpose of advancing those sciences to which it is of so much interest.

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* Report of the Council of the Yorkshire Philosophical Society for 1831—2.

" None of our societies has ever pretended to collect observations of this kind on a regular system, nor to form a national catalogue of the scattered particulars of any one science, accurately detailed ; and yet the great value which would attach to such collections of facts, when reduced and analyzed, must often have occurred to the enlightened conductors of such institutions; but that which has prevented any single body from venturing on the undertaking, has been the impracticability of carrying it on over so extensive a territory as an entire kingdom. There *is* a method, however, by which these important objects might be achieved. Were there in every county one or more provincial societies, having some members competent to superintend, and others ready to execute, the observations within definite limits, and were these societies willing to work together under a common plan, the natural history of the country, and all the geographical data of philosophy included within it, might easily be collected in a manner far more perfect than has ever yet been attempted.

"With a just sense, therefore, of the consequence to science of combining the Philosophical Societies dispersed through the provinces of the empire in a general co-operative union, the British Association has not only invited them to join its meetings, but has given to those whom they may specially depute to represent them, the privilege of becoming members of the Committee by which its affairs are conducted.

"It appears to the Council that in availing themselves of the bond of connection thus offered, Societies, at the same time that they will contribute most essentially to the success of this extensive plan, will add greatly to their own efficiency. When individuals meet for scientific objects, the effect of the general effort, emulation, and example, is to produce a spirit of exertion which gives to such meetings their principal value. And if societies shall concur in thus meeting each other, in proposing certain common objects, in communicating from year to year the means which they are employing and the progress which they are making,—it seems impossibe that this should be done in the presence of an assembly concentrating a great part of the scientific talent of the nation, without kindling an increased ardour of emulous activity ; it seems impossible that the deputies of any society should attend such meetings without bringing back into its bosom an enlargement of views and communicating to its members new lights of knowledge, new motives for inquiry, and new encouragement to perseverance.

"The actual assembling of one of the meetings at the place in which any society is established, has a tendency to produce the same effect in a still more powerful degree, and the Council does not hesitate to state that this institution has received a sensible impulse in all these respects, from the visit with which it has recently been honoured. The plan indeed on which it was first founded, and on which it has been since conducted, was in the spirit of the design which may now be contemplated for the whole kingdom. Its especial aim has been to collect information respecting its own County, and the end to which it aspires has been described in a former Report to be the execution of such a history of Yorkshire as the Natural Philosopher and the Antiquary may be contented to possess. But how greatly will the importance of this object be heightened when it is incorporated into a national system, and when all the results of our inquiries become part of the materials of a far more extensive analysis. It could not but be felt before by a provincial Society, that, in executing the task which it had undertaken, advice and consultation were wanted. With how much more confidence may it proceed when it has the advantage of consulting with the Committee of this great national Association. In comparing the views which it entertains, and the methods which it employs, with those that may be offered to its consideration, how largely may it profit by such a commerce, without sacrificing any portion of its real dignity or independence."

Should views like those which are here expressed be generally adopted, should the Societies established in different districts be disposed to combine their exertions through the medium of this Association, for the purpose of carrying a general system of observations into effect, each Society would then become a centre of instruction to its own neighbourhood, from which correct means and methods of investigation might be derived. Thus, for instance, a large proportion of the philosophical instruments at present in use are so imperfectly constructed, and so discordant in their indications, as to be of little service to science; *but if Societies will send to the next Meeting of the Association the Thermometer or portable Barometer which they employ*, in order that they may be examined, and that any error which may be found in them may be rectified or estimated, the instruments will thenceforward not only speak the same language among themselves, but will become *standards* with which in every part of the kingdom those of insulated observers may be compared.

The principles which have been already noticed as having regulated the choice of some of the subjects of investigation recommended in the present Report, are important to be borne in mind, *at the ensuing Meeting, by those who may take a share in proposing matter of inquiry or discussion.* To come to a common understanding on unsettled questions of general interest, to fix the data on which important points of theory hinge, to collect and connect extensive series of observations; these appear to be the objects which peculiarly belong to the Association, and which should therefore be chiefly, if not exclusively, contemplated. It is also very material that *those who propose any subject of inquiry should have considered it well in a practical point of view.* It is not enough to put forth general recommendations of inquiries without making specific arrangements for their being actually undertaken. The Committee which met for the first time at York laboured under a disadvantage in this respect, from not knowing on what auxiliaries to reckon. Much was in consequence left to subsequent correspondence with the members of the different Sub-committees, which, had it been possible, ought to have been settled at the Meeting itself.

These deficiencies, however, have been so far surmounted, that a highly valuable store of appropriate scientific communications, as has been seen, is already provided for the approaching Meeting; and in this respect also it will possess a great advantage over the last. The *Transactions*, of which an account is given in the Report, were miscellaneous contributions not expressly designed for the use of this Institution, and in consequence they occupy but a small space in the present publication. It is a principle of the Association to claim no right of property in the papers which it receives; and, with the exception of one Essay, which, by leave of the accomplished writer, has been printed at length, the remainder of this part of the Report consists of abstracts or notices of memoirs which will be communicated to the public through other channels. A few interspersed memoranda of the occasional discussions which followed the reading of the papers, have been inserted, chiefly to illustrate the plan of proceeding which was pursued at the meeting.

It only remains to be added, that the time which has been fixed upon as that on which it will be most convenient for the Association to assemble at Oxford, is the 18th day of June, 1832.

YORK, *February*, 1832.

PROCEEDINGS

OF THE

GENERAL MEETING.

On the morning of September the 27th, 1831, the Theatre of the Yorkshire Museum was filled by an assemblage of more than three hundred persons,* including many distinguished members of learned and scientific bodies in different parts of the united kingdoms, who were collected together in consequence of a general invitation to the friends of science, which had been issued by the Yorkshire Philosophical Society. At half past twelve o'clock, on the motion of Dr. Brewster, Viscount Milton, the President of the Society, was called to the Chair, and addressed the Meeting nearly in the following words:

"Gentlemen,

You have been kind enough to call me to the Chair of this Meeting, which is indeed one of the most important description; and I only regret, that you have not turned your eyes towards a person, whose acquirements would render him more qualified to fulfil the duties imposed on him. But I trust that, although I may be in some respects deficient, at least I am not deficient in an anxious desire to promote those objects which have been in the view of the authors of the Philosophical Society established in this city, and also those which will be brought under the consideration of the Meeting now assembled. It must undoubtedly be highly satisfactory to the Members of the Society who have taken an active part in making the arrangements for the purpose, to see that we are honoured with the attendance of persons from all parts of the kingdom, who testify, by coming from so great a distance, their desire to co-operate with the movers of this Meeting, and to carry its objects into effect. Similar Meetings, it is well known, have taken place on the continent of Europe, which have been attended by the most beneficial effects, and I trust that the same effects will attend those that we are now commencing here. In our insular and insulated country, we have few opportunities of communicating with the cultivators of science in other parts of the world. It is the more necessary, therefore, to adopt means for opening new channels of communication with them, and at the same time of promoting a greater degree of scientific intercourse among ourselves. Nor do I see any reason to doubt the successful issue of this undertaking. When I consider what the Yorkshire Philosophical Society has accomplished,—when I view the establishments it has founded, and when I recollect, that it has not existed for more than eight or ten years; having owed its origin, I believe, to the curious discoveries which were made at Kirkdale,—when, I say, we can trace the progress of a body now so considerable, to so inconsiderable a source,—may we not entertain a confident hope, that the Meetings thus auspiciously begun, will rapidly advance to still greater importance, and become the source of incalculable advantage to science hereafter? In addition to other more direct benefits, I hope they will be the means of impressing on the government of this country the conviction, that the love of scientific pursuits, and the means of pursuing them, are not confined to the metropolis; and I hope, that, when the government is fully impressed with the knowledge of the great desire entertained to promote science in every part of the empire, they will see the necessity of affording it due encouragement, and of giving every proper stimulus to its advancement. Perhaps the most effectual method of promoting science is by removing the obstacles, which oppose its progress; though I am aware of the fact, that there are some investigations which require to be carried on upon so great a scale, as to be beyond the reach of individual enterprise; and to these, undoubtedly, the energies of government should be directed. We all know, that the laws of this country,—I mean in particular the fiscal laws of this country,—offer numerous obstacles to scientific improvements. I will name only one instance. In the science of optics very serious obstacles are found to result from the regulations relative to the manufacture of glass. I mention only this; but it must occur to many of the persons present, that there are various other instances, in which the laws interfere materially with the progress of science. With regard to the more direct advantages which we have a right to anticipate from these Meetings, I have no doubt, that, if they shall be extended to different parts of the country, and held in well-selected places, this result will be obtained: the men of science, now scattered over the empire, will be enabled to meet each other, and mutually communicate their ideas; they will state the advances which have been made in their own respective spheres of action, and also what the deficiencies may be. Thus not only will an extraordinary impulse be given, but the individuals and the Societies taking part in the Meetings, will learn what parts of science they can cultivate with the greatest utility, and will give their researches the most advantageous direction. Such, Gentlemen, are a few of the benefits which, it appears to me, will be derived from Meetings of this description, and if they shall be extensively held, and shall be found thus pregnant with important consequences, sure I am, that it will redound to the honour of this Society to have been the first to set the example."

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* The number of Tickets issued, was three hundred and fifty-three.

Lord Milton concluded by expressing the sense which he entertained of the services which, his friend and predecessor in the office of President, Mr. W. V. Harcourt, had rendered to the Institution, within whose walls they were assembled.

The Rev. William Vernon Harcourt, Vice-President of the Yorkshire Philosophical Society, and Chairman of the Committee of Management, then addressed the Meeting:

"Gentlemen,

"I am desired by the Council of the Yorkshire Philosophical Society to submit to your consideration a plan, which they beg leave to propose for the conduct of this Meeting, and for the establishment of a system, on which similar Meetings may continue to be conducted hereafter.

"The Meeting, Gentlemen, owes its origin to some distinguished cultivators of science* here present, who were of opinion that great advantage might be expected from an Association for scientific intercourse in these kingdoms, formed upon the model of that which has subsisted in Germany for several years,—an Association which appears to have answered the hopes of its founders, as well in approximating men of science to each other, and promoting among them friendly feelings and an instructive interchange of ideas, as in giving to their union a collective efficacy, and bringing their aims and views more prominently into public notice.

"Fully concurring in the utility of such objects, our Society cordially embraced the proposal which was made to us, that the first Meeting should be held in these apartments—happy if the accommodation which we have to offer could be made serviceable to a purpose of so much public interest, and not insensible, Gentlemen, to the honour and advantage which the presence of so distinguished an assembly would confer upon our own Institution.

"In conformity also with the express desire of the promoters of the Meeting, we undertook to make all the arrangements for it, and to prepare the plan of a permanent Association. I will request the Secretary of the Committee of Management to state, in the first place, what arrangements were made, and will afterwards proceed to give an account of the plan which I have to offer to your consideration."

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* The Meeting was proposed by Dr. Brewster to the Yorkshire Philosophical Society in a letter to one of the Secretaries, (Mr. Phillips). The proposal was approved and encouraged by the Society, and it received the most zealous and effective support from Mr. Robison, Mr. Forbes and Mr. Johnston in Edinburgh, and from Mr. Murchison in London.

Mr. Phillips, Secretary of the Society and of the Committee of Management, made the following statement:

"The Committee, Gentlemen, being of opinion that the invitations to this preliminary Meeting should be co-extensive with whatever desire there might be in the country to promote the objects of Science, drew up in the first instance a circular letter inviting the attendance of all persons interested in scientific pursuits, which, in case any one who is here present should not have received it, it may be proper for me to read:—

"Sir,

"The Council of the Yorkshire Philosophical Society having received intimation from men of scientific eminence in various parts of the kingdom, of a general wish that a Meeting of the Friends of Science should be held at York during the last week in September next, we are directed to announce that the Society has offered the use of its apartments * for the accommodation of the Meeting, and that arrangements will be made for the personal convenience of those who may attend it. It will greatly facilitate these arrangements, if all who intend to come to the Meeting, would signify their intention as early as possible to the Secretaries.

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* The Museum of this Society stands upon ground lately granted to it by the Crown, having been part of the site of the palace built by James I. The platform on which it is placed overlooks the river and combines views of the Minster, the ancient walls of York, and the hills of Severus. Within the garden at either extremity are the remains of the old Roman fortifications and the mutilated but beautiful ruins of the Abbey of St. Mary. The Collections of Natural History are distributed in five apartments, the three largest of which are arranged round the Lecture

"The apartments, which the Yorkshire Philosophical Society has to offer for the use of the Meeting, consist of a spacious Theatre, three large rooms containing the Museum of Natural History, a Library, Council Room, &c.

"All persons interested in scientific pursuits are admissible to the Meeting.

WILLIAM VERNON HARCOURT, Vice-President.
JOHN PHILLIPS, Secretary.

"*Yorkshire Museum, York,*
July 12, 1831.

"Copies of this circular letter were sent to the Presidents and Secretaries of all the Scientific Institutions in England, metropolitan and provincial, which were known to the Committee, with a request that the invitation might be communicated to any members of those Institutions who might be disposed to accept it. The number of Societies in London thus addressed was THIRTEEN; the number in other parts of England was TWENTY-SIX, NINE of these being in the County of York.

"The letter was sent individually to the more distant Members of our own Society, and to persons, whether belonging to any Society or not, who were known to be active cultivators and promoters of science. One hundred and eighty-nine copies were issued on the latter account. In this

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room and lighted from above. In one of these are the cabinets of minerals, in another a suite of 12,000 geological specimens disposed in the order of the strata, and the third contains collections in the various departments of Zoology. The two remaining rooms are filled with several series of rock specimens, and with an anatomical collection belonging to the Curator of Anatomy. The Lecture room affords seats for three hundred persons. The Society possesses also a Library of works of Science, a Laboratory, and several other rooms adapted to the purposes of the Institution. In one of these is contained a series of Roman and British coins and various objects of antiquarian interest, in another an architectural collection of sculptured Gothic remains, discovered in the excavations on the ancient site of the Abbey. The architecture of the façade of the Museum is Grecian Doric, and was designed by Mr. Wilkins.

list, and even in the list of Societies, it is more than possible that the Committee may have been guilty of some omissions, which they hope, however, will be pardoned, when the number of letters sent out is considered, amounting, in the whole, to more than four hundred. One hundred copies were also transmitted for similar distribution to Societies and individuals, by the correspondents of the Committee in Scotland and Ireland; and two or three eminent foreigners were in like manner individually invited, though the Committee did not deem it prudent to extend invitations abroad, till it should be seen what reception the plan of the Association might meet with at home. Lastly, to ensure more general publicity, advertisements of the Meeting were inserted in the Philosophical Magazine for the months of August and September, an announcement of it having before appeared in the Edinburgh Journal of Science."

Mr. Phillips then proceeded to read the answers which had been received to these invitations from persons who had been prevented, by unavoidable engagements, from being present at the Meeting:—answers, which, whilst they excited a deep regret for the absence of the distinguished writers, shewed what valuable support the Association might justly count upon receiving from them hereafter. He stated, "that in several instances deputations had been appointed by provincial Institutions to attend the Meeting, and that gentlemen were present, who had come for that purpose from London, Edinburgh, and Dublin, from Newcastle, Manchester, Liverpool, and Birmingham, and even from Bath and Bristol. The great distance of the Plymouth Institution had prevented any of its members from being present; but the official letter received from that body was a gratifying proof of the general interest felt in these proceedings, and of the benefit to be expected from a migratory Association, which might another year be as conveniently attended by the Southern, as on this occasion by the Northern Societies.

"When the time appointed for the Meeting drew nearer, the Committee of Management put into circulation another notice, specifying more particularly the nature of the regulations which they proposed to adopt. The second circular notice was as follows:

"GENERAL SCIENTIFIC MEETING AT YORK.

"It is requested that persons proposing to attend the Meeting will give notice of their intention to the Secretaries of the Yorkshire Philosophical Society.

"Models of Inventions, Specimens of Natural and Artificial Products, to be exhibited at the Meeting, Instruments or Drawings to illustrate any communication, and Materials for Experiments, will be received by the Secretaries, and may be transmitted to them previous to the Meeting.

"It is also desirable that Memoirs intended to be read, or a short statement of their contents should be sent beforehand, in order to their being registered; and that any Memoir which may be too detailed to admit of being read at length, should be accompanied by an abstract of its principal contents.

"On Monday, the 26th inst. the Managing Committee will receive, at the Museum, the names of Persons intending to be present; and will deliver Tickets for the Morning and Evening Meetings, and Dinners, and references for Lodgings. The Committee will think it right to pay regard to economy, as well as convenience, in these arrangements.*

"The Apartments of the Society will be opened on Monday Evening, and the first Morning Meeting for scientific purposes, will be on Tuesday, the 27th, at Twelve o'clock.

"Yorkshire Museum,
September 7, 1831.

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* On Tuesday a public dinner was provided at Twelve Shillings a Ticket; on the other days, during the session, ordinaries at from Five to Seven Shillings a head: venison, game, and fruit being contributed by Earl Fitzwilliam, the Earl of Carlisle, Paul Beilby Thompson, Esq. and Richard John Thompson, Esq. The Archbishop of York gave a public dinner to the Members of the Association on Friday. The Evening refreshments were furnished by a subscription among the Members of the Yorkshire Philosophical Society.

"To this account of the regulations of the Committee, it only remained to be added, that the number of scientific papers to be brought forward, was so considerable, as to demand the employment of the evenings as well as the mornings of the week, and the Committee recommended that the communications of the least abstract nature should be allotted to the evening Meetings, as it was proposed to admit a more popular audience to these."

Mr. Phillips having concluded his statement,—Mr. Vernon Harcourt again rose and read extracts from letters which had been addressed to him by Mr. Chantrey, Mr. Faraday, and Dr. Buckland, who had been reluctantly prevented from attending the Meeting by pressing engagements. Mr. Chantrey, he said, had given the Yorkshire Philosophical Society another proof of his liberal disposition to promote science, by presenting to its Museum, on this occasion, a Cast of the celebrated specimen of Plesiosaurus in the Duke of Buckingham's collection. He then read a letter which he had received from the Duke of Sussex, who had been invited to honor the Meeting with his presence. The letter stated, that nothing would have afforded his Royal Highness greater pleasure than to have complied with the invitation, if he had not been unfortunately pre-engaged. "You will, therefore," His Royal Highness added, "be so kind as to express my regret on the occasion, accompanied with my best wishes for the success of so praiseworthy an object, and an assurance on my part, of my warm co-operation in promoting any measure which may be suggested, and sanctioned by such a respectable Meeting."

Mr. Harcourt then commenced his exposition of the OBJECTS AND PLAN OF THE ASSOCIATION.

"When we came to meditate, Gentlemen, on the means of giving stability and continuance to such Meetings as these, when we considered how little command of time men of science in this country enjoy, and how difficultly they are drawn from their occupations and homes, we could not but entertain a doubt whether the inducement of meeting one another, without a more imperative call, would be powerful enough to bring them annually together, from distant parts of the kingdom. But, if there were objects of more essential consequence, which a yearly aggregate Meeting might propose to accomplish, objects now unattempted, and yet of the highest moment to the advancement of science, then we apprehended, that those who have any zeal to advance it would not lightly absent themselves from such a Meeting, and that thus the benefit of personal intercourse would follow in the train of still more important advantages.

" Views of this extent, however, were not to be indulged without consultation; and, before we ventured to bring them forward, we inquired the opinions of several of the most distinguished among the lights of British science: from some of those who were consulted, we received warm encouragement and valuable suggestions, whilst to others we were indebted for cautions, of which we also knew the value, and for a fair representation of the obstacles opposed to our success. These different opinions have been weighed with the attention which they deserved; and I present this plan to the Meeting, as one of which all the bearings have been considered, and of which the deliberate consideration has led us to hope, that a great preponderance of advantage may be derived from its adoption.

" I propose then, Gentlemen, in the first place, that we should found a BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, having for its objects, to give a stronger impulse and more systematic direction to scientific inquiry, to obtain a greater degree of national attention to the objects of science, and a removal of those disadvantages which impede its progress, and to promote the intercourse of the cultivators of science with one another, and with foreign philosophers.

" On the first and most important of these objects, some difference of opinion may exist; a difference of opinion, I mean, as to the want in which we stand of a new Association, to give a stronger impulse and more systematic direction to scientific inquiry.

"I do not rest my opinion, Gentlemen, of this want upon any complaint of the decline of science in England. It would be a strange anomaly if the science of the nation were declining, whilst the general intelligence and prosperity increase. There is good reason, indeed, to regret that it does not make more rapid progress in so favourable a soil, and that its cultivation is not proportionate to the advantages which this country affords, and the immunity from vulgar cares which a mature state of social refinement implies. But, in no other than this relative sense, can I admit science to have declined in England. What three names, if we except the name of NEWTON, can be shewn in any one age of our scientific history which rank higher than those of men whose friendship we have enjoyed, by whose genius we have been warmed, and whose loss it has been our misfortune prematurely to deplore, the names of DAVY, WOLLASTON, and YOUNG! And there are men still remaining among us, individuals whom I must not mention, present in this Meeting, and absent from this Meeting, whose names are no less consecrated to immortality than theirs.

"But it is not by counting the great luminaries who may chance to shine in this year, or that,—in a decade of years, or a generation of men,—that we are to inform ourselves of the state of national science. Let us look rather to the numbers engaged, effectually, though less conspicuously, in adding by degrees to our knowledge of nature; let us look to the increase of scientific transactions and journals; let us look, Gentlemen, at the list produced this day of Philosophical Societies which have grown up in all parts of the kingdom. The multiplication of these new and numerous institutions indicates a wide extension of scientific pursuits. The funds so liberally contributed to their support bear evidence of an enlarged disposition in the public to promote such pursuits.

" It is on this very ground I rest the necessity and the practicability of establishing in science a new impulsive and directive force, that there are new and more abundant materials to be directed and impelled. The mining-field of discovery seems to me to shew, on the one part, the ore breaking out on every side; veins of the precious metal scarcely opened or imperfectly wrought; and on the other a multitude of hands ready to work it ; but no one engaging them to labour, or shewing them in what manner they may employ their industry to the best advantage. And therefore it is that I propose to you to found an Association including all the scientific strength of Great Britain, which shall employ a short period of every year in pointing out the lines of direction in which the researches of science should move, in indicating the particulars which most immediately demand investigation, in stating problems to be solved and data to be fixed, in assigning to every class of mind a definite task, and suggesting to its members, that there is here a shore of which the soundings should be more accurately taken, and there a line of coast along which a voyage of discovery should be made.

" I am not aware, Gentlemen, that in executing such a plan we should intrude upon the province of any other Institution. There is no society at present existing among us, which undertakes to lend any guidance to the individual efforts of its members, and there is none perhaps which can undertake it. Consider the difference, Gentlemen, between the limited circle of any of our scientific councils, or even the Annual Meetings of our societies, and a Meeting at which all the science of these kingdoms should be convened, which should be attended, as this first Meeting you see already promises, by deputations from every other Society, and in which foreign talent and character should be tempted to mingle with our own. With what a momentum would such an Association urge on its purpose ! what activity would it be capable of exciting ! how powerfully would it attract and stimulate those minds, which either thirst for reputation or rejoice in the light and sunshine of truth!

"The eldest of our scientific Institutions contemplated, in its origin, the objects which we now propose to pursue. The foundation, Gentlemen, of the Royal Society was an attempt to reduce to practice the splendid fiction of the New Atlantis.*

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* The actual and immediate effect produced by Bacon on the general spirit of philosophy has been underrated: His writings were quickly circulated through Europe, and their value was appreciated abroad even sooner than at home: he himself translated the New Atlantis into Latin, "in gratiam exterorum apud quos expeti inaudiverat," and his most important works were rendered into that language and into French before his death. His letter to Baranzon, who lectured on Natural Philosophy at Annecy in Savoy, and who, it appears, had consulted him on the substitution of his inductive method for the syllogisms of Aristotle, deserves attention not only as containing the most perspicuous summary of his views, but as shewing how far the authority and influence of his writings had reached in 1621. It has been said by Playfair that Descartes, who became afterwards the head of so numerous a school, "does not seem to have been acquainted with Bacon's works;" and another eminent historian of philosophy, Dugald Stewart, has admitted that, "if he ever read them he has no where alluded to them in his writings." But the fact is that in the correspondence of Descartes with Mersenne, published in 1642, there are, in several of his letters, passages in which he has referred to the works of "Verulam" with a respect which he yielded to no other writer, and has shewn that he had both studied them and adopted the methods which they contain; so that there is no longer any difficulty in accounting for the remarkable coincidence with Bacon's views and language which Mr. Stewart has noticed in the principles laid down by Descartes for studying the phenomena of the mind. The passages to which I refer are these: "Scribis præterea velle te scire modum aliquem faciendi experimenta utilia; ad quod nihil est quod dicam *post Verulamium* qui hac de re scripsit, nisi quod omissis minutioribus circumstantiis oporteret in qualibet materia potissimum facere generales observationes rerum omnium maxime vulgarium et certissimarum et quæ sine sumptu cognosci possint, ut, ex. gr. cochleas omnes in eandem partem esse contortas, atque utrum idem obtineat trans æquinoctialem; omnium animalium corpus esse divisum in tres partes, caput, pectus, et ventrem, et alia id genus, hujusmodi enim observationes ad veritatis investigationem certo deducunt. *(Ep. LXV.)*

The same comprehensive mind which first developed the true method of interpreting nature, sketched also the first draft of a national Association for undertaking by a system of distributed and combined exertion, the labour of that work.

"Gratias tibi ago pro qualitatibus quas ex Aristotele desumpsisti; majorem illorum catalogum, partim ex *Verulamio* desumptum, partim a me collectum jam conscripseram, illasque imprimis conabor explicare. *(Ep. C. V.)* Scripsisti ad me aliquando esse tibi notos viros quibus volupe erat scientiis propagandis dare operam, (these were probably the persons whose meetings at Mersenne's house laid the foundation of the French Academy,) adeo ut nullum non experimentorum genus propriis sumptibus se facturos profiterentur. Illorum siquis vellet conscribere historiam phenomenorum cœlestium secundum methodum *Verulamii,* atque omissis rationibus et hypothesibus accurate describeret cœlum prout nunc apparet, quem situm singulæ stellæ fixæ respectu circumjacentium obtineant, quæ sit aut magnitudinis, aut coloris, aut luminis, aut scintillationis, &c. differentia; item numquid ea consentiunt cum iis quæ de illis veteres Astronomi scripserunt, quave in re differant, (neque enim dubito quin stellæ situm inter se suum aliquantulum mutent quamvis fixæ habeantur) hisque subjiceret observationes Cometarum, tabellam conficiens de uniuscunque motu, quemadmodum Tycho de tribus aut quatuor a se observatis fecit, denique variationes Eclipticæ et apogoeorum planetarum, opus esset utilius quam forte primo intuitu videatur, essetque mihi magnum operæ compendium; sed non spero id facturum quenquam. *(Ep. LXVII.)* If any one will compare these suggestions with the letter to Baranzon before referred to, he will find them almost a literal transcript of Bacon's request to the Savoyard philosopher to undertake this identical task. These extracts shew the philosophical character of Descartes in a light somewhat different from that in which it is commonly regarded; like other great geometers before and since, he carried the use of abstractions and hypotheses too far and too soon into physical reasoning; but though he did not, with the wisdom of Newton, abide by the fundamental principle, laid down by Bacon, "non fingendum, nec excogitandum, sed inveniendum, quid natura faciat aut ferat," he was no stranger to the inductive method of collecting axioms from observation and experiment. In a letter addressed to Descartes, and prefixed to his celebrated treatise on the passions, a strong appeal is made to the public liberality to enable him to pursue those multiplied experiments for which he had occasion in order to carry on his investigations into nature. It is stated in this

" This philosophical romance was not composed by its great author to amuse the fancy, but to dispose the minds of the legislature towards the foundation of a public establishment for the advancement of science. His plan for its maintenance is detailed in ' a speech, touching the recovering of drowned mineral works, prepared for the parliament by the Viscount of St. Albans, then Lord High Chancellor of England.' For that end he would have proposed, by legislative enactment, ' to bring those deserted mineral riches into use by the assiduous labours of felons and the industry of converted penitents, whose wretched carcasses the impartial laws have dedicated, or shall dedicate, as untimely feasts to the worms of the earth.' ' By this unchargeable way, my Lords, have I proposed to erect the academical fabric of this island's Solomon's house, modelled in my New Atlantis, and my ends are only to make the world my heir, and the learned fathers of my Solomon's house the

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letter, that Gilbert had expended more than 50,000 crowns on the magnet alone, and that to execute all the experiments which Bacon had designed, would require more than the revenue of two or three kings. The writer (probably Mersenne) refers to "l'Instauratio magna et le Novus Atlantis du Chancelier Bacon, qui me semble estre de tous ceux qui ont escrit avant vous celuy qui a eu les meilleures pensées touchant la methode qu'on doit tenir pour conduire la Physique en sa perfection."

In England meanwhile an experimental school was forming, more faithful to the principles of the inductive philosophy. Foremost among the founders of the Royal Society, " Mr. Boyle, the ornament of his age and country, succeeded to the genius and inquiries of the great Chancellor Verulam" * ; and he has left us no doubt as to the master by whom he had been taught; for in recording his experiments he has retained not only the method, but the peculiar idiom and technical phrases of Bacon. Thus this great interpreter of nature stood among philosophers like the pilot among the crew; he constructed the chart of knowledge, he marked upon it the place of the ship, he took the bearings of the land, he pointed out the variation of the compass, he noted the force and direction of the winds, and taught the adventurer to steer a certain course over the wide and trackless sea.

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* Boerhaave.

successive and sworn trustees, in the dispensation of this great service, for God's glory, my prince's magnificence, this parliament's honour, our country's general good, and the propagation of my own memory.' From this speech it appears that the basis of the great Institution, which Bacon meditated, was a public provision for the maintenance and promotion of science. It was one of the defects noted by him in his masterly survey of the state of learning, that science had never possessed a *whole man* ; and he exerted all the influence of his high station and commanding talents, to promote the supply of that defect. In a letter to the king respecting the foundation of the hospital at Dulwich by Allen the actor, he remarked, that though he was glad to see him play the last act of life so well, yet he thought Sir H. Savile's endowments of geometrical and astronomical Professorships of much greater necessity and more deserving of royal encouragement; and his own last bequest was one which, had it been executed, would have endowed two similar offices with salaries of two hundred pounds a year. In his opinion it was 'necessary to the progression of sciences, that those who are to generate and propagate them should be placed in such a condition as may content the ablest man to appropriate his whole labour, and continue his whole age, in that function and attendance ;' and he added, 'there will hardly be any main proficiency in the disclosing of nature, except there be some allowances for expenses about experiments, whether they be experiments appertaining to Vulcan or Dædalus, furnace or engine, or any other kind; and therefore, as secretaries and spials of princes and states bring in bills for intelligence, so you must allow the spials and intelligencers of nature to bring in their bills, or else you shall be ill advertised.'

"These desiderata no means have yet been found of supplying in an adequate degree, and science even to the present day can scarcely be said to possess more than *fractions of men.* The Royal Society did not attempt to execute this part of Bacon's plan; but in other respects it copied as closely as possible, the model of the *six days College.* It was not then an association of individuals throwing their contributions casually into a common stock, but a body politic of philosophers acting in a corporate capacity and with systematic views, allotting to its members their respective tasks, and conjunctively debating and consulting for the advancement of knowledge. It had, in the figurative language of Bacon, its *merchants of light,* who were dispatched in various directions at home and abroad, to gather information and bring back specimens of the productions of nature ; it had its *depredators* who were deputed to examine histories of *countries,* and to question the travellers who had visited them, in order that queries might be framed which were then addressed to the Society's correspondents in foreign lands, among whom Consuls and Ambassadors were proud to be numbered. It employed some of its members as auxiliaries to the arts, to some it proposed the solution of the most important problems in mathematics, whilst it referred to others the charge of experimental researches, the mode of conducting which was discussed before-hand, and the results re-examined by a public meeting. I may mention as examples of the effect of this system, that we are indebted to it, practically, for *Evelyn's History of Forest Trees,* by which the planting of the country was so materially promoted, and, theoretically, for the determination of *the law of the collision of bodies,* simultaneously obtained from Huygens, Wallis, and Wren.

"This was indeed to execute a noble plan in the spirit in which it was designed. The noise of works and inventions resounded on every side ; new facts and original discoveries of the laws of the universe were daily brought to light ; the conveniences and safeguards of life, the measurements of time, the construction of ships, the tilling and planting of the earth began to be rapidly improved. But the vigour of these exertions soon declined, and within thirty years we find Leibnitz suggesting to one of the original founders * of the Royal Society that it wanted new warmth to be infused into its constitution, and recommending that it should be remodelled after the example of the French Academy.

"Leibnitz indeed had no right to consider a Society effete, which within a few years had elicited a work † from Newton, that eclipsed the fame even of the great German philosopher. Nor to this hour has it ever lost its title to public respect. It still embodies in its list every name which stands high in British science; it still communicates to the world the most important of our discoveries, it still crowns with the most coveted honours the ambition of successful talent, and when the public service requires the aid of philosophy, it still renders to the nation the ablest assistance, and the soundest counsel. Nevertheless it must be admitted, Gentlemen, that the Royal Society no longer performs the part of promoting natural knowledge by any such exertions as those which we now propose to revive. As a body, it scarcely labours itself, and does not attempt to guide the labours of others.

"Hence it happens, that when any science becomes popular, and those who interest themselves in its advancement perceive the necessity of working for it by united exertions, that science is detached from the central body; first one fragment falls off, and then another; colony after colony dissevers itself from the declining empire, and by degrees the commonwealth of science is dissolved. The new societies distinguish themselves by their diligence and activity; the parts of knowledge which thus receive more distinct attention, and are propelled by more undivided labour, make rapid advances; and each separate undertaking justifies itself by the most promising appearances and undeniable fruits.

"This is a new stage, Gentlemen, in the progress of science; a new state of things, which, whilst it is attended certainly

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* Dr. Wallis.

† The Principia, as well as the Optics, of Newton were published at the solicitation of the Royal Society.

with great advantages, has some consequences of doubtful aspect to the highest aims of philosophy. As the facts and speculations in any department of knowledge are multiplied, the study of it has a tendency to engross and confine the views of those by whom it is cultivated; and if the system of separate societies shall encourage this insulation, science will be in the end retarded by them more than it is at first advanced. The chief Interpreters of nature have always been those who grasped the widest field of inquiry, who have listened with the most universal curiosity to all information, and felt an interest in every question which the one great system of nature presents. Nothing, I think, could be a more disastrous event for the sciences, than that one of them should be in any manner dissociated from another, and nothing can conduce more to prevent that dissociation, than the bringing into mutual contact men who have exercised great and equal powers of mind upon different pursuits; nothing more fitted to shame men out of that unphilosophical contempt which they are too apt to feel for each other's objects; nothing more likely to open to them new veins of thought, which may be of the utmost importance to the very inquiries on which they are more peculiarly intent.

"I remember, at the Meeting of a foreign Society, to have heard a memoir read, in which a specific and original difference was inferred between two animals, (commonly considered of one species) not from any difference in the higher and more essential parts of their organization, but from a dissimilarity of colour in the skin or fur, and from minute anatomical distinctions; and I heard the error of the Zoologist corrected by a Botanist, one of the most eminent in Europe, who illuminated the whole subject of generic, specific and individual difference, by the light of a powerful mind which had been directed to the study of the question, considered in a different aspect, and with a more extensive survey. In like manner it is easy to conceive on the one hand, how much advantage might be derived to geological debates from the presence of a sober and rigorous mathematician; and how on the other hand, the abstract analyst and geometer might have his calculations restricted and promoted by listening to the detail of facts, which those could give him who cultivate the sciences more directly dependent on observation and experiment.

But there is a defect in these separate Societies, in respect to their own immediate objects, which I am sure no member of them would wish to dissemble, and which arises from the narrow basis on which they are of necessity built. It is not only, that the constant converse of men, who, to borrow the expression of Goldsmith, have often travelled over each other's minds, is not half so effectual in striking out great and unexpected lights, as the occasional intercourse of those who have studied nature at a distance from each other, under various circumstances and in different views; but it is also, Gentlemen, that none of our existing Societies is able to concentrate the scattered forces even of its own science; they do not know, much less can they connect or employ that extensive and growing body of humble labourers who are ready, whenever they shall be called upon, to render their assistance. I have the pleasure of seeing here the President of the Geological Society of London, and I beg leave to ask him, whether in a science, the most complex of all sciences in its object, because it aims at decyphering the history of nature not only as it is but as it has been, in a science of which very few even among the lowest generalisations are as yet so settled as to be able to bear the weight of any theoretical superstructure whatever, I ask him whether in the science of Geology there is not a multitude of facts to be ascertained in every district, on which he would be glad to see a much greater number of observers employed? and if it be so, let me remind him that we have heard to day of nine Philosophical Societies in this county alone, which could doubtless find members ready to prosecute any local inquiry that this Meeting might, at his suggestion, request them to undertake. It is the same with all parts of Natural History, with Meteorology, and indeed with every science which is founded upon observation, or even upon experiment; for the lower order of experiments, in subjects of the utmost ultimate abstractness, such as the relations, for instance, of heat and of light, are not only abundantly wanted, but by a moderate degree of industry and talent are by no means difficult to be supplied.

"What numberless suggestions, what a crowd of valuable but abortive hints are continually floating in the thoughts of philosophers, for the pursuit of which time is wanting to themselves! Now I say, Gentlemen, that we have among us, scattered through the country, men willing to adopt these unexecuted hints, as they arise out of the profound and varied meditations of more experienced minds, men not incapable of surveying with accuracy a limited district, though they may not pretend to draw the general outline of the map, or fill up the whole of its details. Many such there are who only wait for instructions, and who require no other stimulus than that of being invited, to render the most essential service to researches and calculations of the highest order; and it is upon this ground especially that we venture to pronounce an Institution wanting, which shall not hesitate to make such invitations and to offer such instructions; it is upon this ground that if we now propose to revive in the nineteenth century a plan devised two centuries ago,—we see a difference, Gentlemen, in the probability of success. Scientific knowledge has of late years been more largely infused into the education of every class of society, and the time seems to be arrived for taking advantage of the intellectual improvement of the nation. Let Philosophy at length come forth and shew herself in public; let her hold her court in different parts of her dominions; and you will see her surrounded by loyal retainers, who will derive new light and zeal from her presence and contribute to extend her power on every side.

"Much, indeed, is not to be gained in the more recondite subjects of investigation from the first essays of inexpert inquirers; but let the number of those inquirers only be increased, collect around you, Gentlemen, a school fired with a zeal for truth, confess to them how little you know compared with what remains to be known, apprise them that there is not a subject to which they can apply themselves where new materials are not wanted to advance the fabric or secure the foundations, let them see that the more multiplied have been your discoveries, the more additional openings to discovery have appeared,—and if you will then draw the precise line of what is, and what is not made out in every science, if you will indicate to them those promising points and *inlets* of inquiry which bid fair to lead to promising results,—if you will thus put before them right subjects, and at the same time suggest the right methods of treating those subjects; whatever more may be wanting to accurate and successful investigation, natural sagacity and a longer experience will easily supply to men possessing only common abilities, and walking in the common paths of life.

"But even the experienced in science will benefit by consultation with each other; for there are different degrees of experience, and no solitary industry or talent can ever hope to equal the power of combined wisdom and concerted labour. Above all consider, Gentlemen, the excitement to exertion which will be felt by those who are solicited to undertake an inquiry at one of these Meetings, and pledged to produce the investigation at another. The greatest minds require to be urged by outward impulses, and there is no impulse more powerful than that which is exercised by publicly-esteemed bodies of men. Even Newton's papers might have remained unfinished, but for the incentive of such a solicitation. In a letter which I have lately received from Mr. Conybeare, and in which he expresses a deep regret at finding himself unexpectedly prevented from attending this Meeting, the benefit in these respects which may be looked for from a general scientific combination is described with the energy of his ardent and comprehensive genius. "Your proposal," he says, 'for ingrafting on the annual reunion of scientific men, a system for effecting such a concentration of the talent of the country as might tend more effectually to consolidate and combine its scattered powers, to direct its investigations to the points which an extensive survey thus generalised would indicate as the most important,—benefited by all the aids which the union of powerful minds, the enlarged comparison of different views, and a general system of intellectual co-operation could not fail to afford, fills me with visions too extensive almost to allow me to write with sufficient calmness of approbation. The combined advantages, including at once the most powerful stimulus and the most efficient guidance of scientific research, which might emanate from such a point of central union, seem to me to be beyond calculation. If views like those you have sketched could be realised, they would almost give a local habitation and a name to the philosophical academy of Bacon's Atlantis, when "divers Meetings and consults" of the united body of DEPREDATORS, COMPILERS, PIONEERS, &c. suggested new experiments of a higher light and more penetrating nature to the LAMPS, and these at length yielded materials to the INTERPRETERS of nature.'

"To that great model of a national Institution for the advancement of science, I have already adverted to-day, as I have formerly directed to it the attention of the Yorkshire Philosophical Society; it is here referred to by Mr. Conybeare, and by a remarkable coincidence of ideas we have the same reference from Mr. Harvey, who in a letter from Plymouth, which he has addressed to the Secretary of the Meeting, observes, that "Bacon alludes to circuits or visits of divers principal cities of the kingdom as forming a distinguished feature of the New Atlantis. What Bacon,' he adds, 'foresaw in distant perspective, it has been reserved to our day to realise, and as his prophetic spirit pointed out the splendid consequences that would result generally from institutions of this kind, so may we hope that the new visions which are opening before us may be productive of still greater effects than have yet been beheld, and that the bringing together the cultivators of science from the North and the South, the East and the West, may fulfil all the anticipations of one of the greatest minds that ever threw glory on our intellectual nature.'

"I have now laid before this Meeting the reasons for which I think it would be expedient to form a national Association, having for its first object to give a stronger impulse and more systematic direction to scientific inquiry. On the two remaining objects which I have before mentioned, it is not necessary for me to enlarge much. It is not necessary to recommend the promotion of a more general intercourse among the cultivators of science, to those who have come in many instances from a great distance expressly to enjoy the gratification of meeting men of kindred minds and congenial pursuits. I shall content myself with remarking that nothing can be better calculated to prevent those interferences, and reconcile those jealousies which sometimes disturb the peace of philosophy than the mutual intelligence and amicable communion of such a Meeting as this. On the grounds which subsist for seeking to obtain a greater degree of national attention to the objects of science, I have little to add to what the Chairman has said. In confirmation of his remarks on the obstacles which some of our fiscal laws oppose to the progress of knowledge, I may adduce the recent experience of this Museum. There is nothing more indispensible to the utility of such an Institution than a complete display of the specimens which it contains; and for that purpose, where the specimens are numerous, extensive glazing is required. Now there is a most serious impediment to this in the high price of glass, and of that price we find that two thirds consist in the duty paid to Government. So that more than one department of science is injured by this tax; the weight of the impost restrains the public exhibition of the objects of natural history; whilst the regulations of the excise oppose an obstacle to the improvement of astronomical instruments, still more to be regretted. Among the subjects to which a Scientific Association may be justly expected to call the public attention, I would particularly instance a revision of the law of Patents. The protection which is given to every other species of property is not given in the same extent to the property of *scientific invention.* The protection which it does receive must be bought of the state at a high price; an expense, varying from two to four or five hundred pounds, is first to be sustained. Then, after encountering the risk of this outlay, the Patentee is compelled to specify publicly and with legal precision, the particulars of his invention; thus it is exposed to be pirated, with the redress only of ruinous proceedings at law; and the consequence is, that no Patent is considered of any value till it has actually maintained a litigation; and though Patents are still taken out, their chief use is understood to be, not so much to secure a right as to advertise a commodity. Such is the present policy of our laws respecting the remuneration of practical science, a policy which seems to have no other end than to restrain the multiplicity of inventions.

"With regard to the direct national encouragement which is due to scientific objects and scientific men, I am unwilling to moot any disputed or disputable question. There is a service of science to be rendered to a state with which it cannot dispense; and all, I think, must allow that it is neither liberal nor politic to keep those, who employ the rarest intellectual endowments in the direct service of the country, upon a kind of *parish allowance.* It would be difficult also to withhold our assent from the opinion that a liberal public provision would have a powerful effect in promoting those studies of *abstract science* which most require artificial encouragement; and that 'to detach a number of ingenious men from every thing but scientific pursuits; to deliver them alike from the embarrassments of poverty and the temptations of wealth; to give them a place and station in society the most respectable and independent, is to remove every impediment and to add every stimulus to exertion.'[*] But I will not on this occasion enter upon a subject on which any difference of sentiment can be supposed to exist, nor pretend to decide whether Playfair judged rightly of the degree in which a provision of this kind has actually improved the state of science in a neighbouring country, when he added, that 'to such an Institution operating upon a people of great genius and indefatigable activity of mind, we are to ascribe that superiority in *the mathematical sciences*, for which, during the last seventy years they have been so conspicuous.'

"One great benefit, at least, in addition to her maritime expeditions, England, as a nation, has conferred on the science of the world. She has had reason to be proud of her astronomical observations; though perhaps it is not equally gratifying to reflect that these observations have been turned to account, of late years, less by her own geometers than by the national school of mathematicians in France. But there are many other sciences, Gentlemen, on which the resources of states are no less dependent, and in them also there are physical data, (I do not here speak of loose and subordinate facts, but of those more important physical axioms from which the general laws of nature are deduced,) in many other sciences, I say, of practical application, there are physical data which require to be ascertained by masters in science, with the most rigorous precision, and not without the most persevering labour; and I may be permitted to think with Mr. Herschel, that 'it may very reasonably be asked, why the direct assistance afforded by governments to the execution of continued series of observations, adapted to this especial end, should continue to be, as it has hitherto almost exclusively been, confined to Astronomy.'

"The Chairman of the Meeting adverting to this subject has said that 'there are enterprises in science which none but a nation can undertake;' let me add also that there are establishments for science which none but a nation can support. I remember, Gentlemen, to have heard the greatest philosopher of this age for variety and extent of attainments, M. de Humboldt, speak of Great Britain, as he was shewing me the splendid collections of natural history in the Louvre. What country in the world, said he, has such opportunities as England for collecting in her capital all the productions of the earth! I reflected, Gentlemen, on those unrivalled advantages,—but felt, I confess, no elation of national pride when I recollected the state of the British Museum. Since that time however one material step has been taken towards improvement, and when an adequate building shall have been prepared, let us hope that we may at length see a public school of natural history in London, so furnished, and so appointed, as not to be unworthy of the British nation. I am persuaded that even our statesmen would have no cause for regret, if whilst the stores of this national repository were replenished by scientific missions judiciously employed, a more accurate knowledge were at the same time obtained of our distant possessions, and of their natural riches, than has been sometimes discovered in our diplomatic transactions.

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[*] Second Dissertation prefixed to the Supplement to the Encyclop. Brit.

"All the remarks, Gentlemen, which I have this day made, have been made with an anxious desire to say neither more nor less than the truth. I have spoken both of scientific societies and of the national policy with all freedom, because I take free speech upon points in which the interests of science are deeply concerned, to be one of the principal purposes for which we are now assembled; but I hope I have spoken also without any disposition to exaggerate the deficiencies which I have thought it right to notice, or to elevate a new institution by detracting from the merits of elder establishments. It only remains for me to lay before you the particulars of the plan by which we propose to accomplish the objects which I have stated; the subordinate details would be most advantageously revised by a Committee, but the material principles on which it is framed are points to which I would request the attention of this Meeting.

"The material principles of the plan are included in the *composition of the Association, in the constitution of its government, and in the selection of the work on which it is to be employed.*

"Having objects in view more extensive and at the same time more specific than those of the German Association, we do not recommend the adoption of the same rules. It is not our desire in the general composition of the Society to separate writers from readers, the professor of natural knowledge from the student. A public testimonial of reputable character and zeal for science is the only passport into our camp, which we would require. We propose therefore, that all *members of Philosophical Societies* in the British empire shall be entitled to become MEMBERS OF THE ASSOCIATION, on enrolling their names, and engaging to pay such subscription as may be agreed upon, the amount of which subscription, we think, ought to be *low;* and we propose that the members shall meet for one week in every year at *different* places in rotation; in order by these *migratory* visits to extend the sphere of the Association, to meet the convenience of distant districts in turn, and to animate the spirit of philosophy in all the places through which the Meetings may move, without rendering them burthensome to any.

"But the governing or executive power of the Association, we think, should be vested in a more select, though still numerous body, and placed in the hands of those who appear to have been actually employed in working for science. We propose therefore, that the GENERAL COMMITTEE shall consist of *all Members present at a Meeting who have contributed a paper to any Philosophical Society, which paper has been printed by its order or with its concurrence;* taking this as the safest definition of the class of persons intended, but leaving power to the Committee to *add to its own number, and to admit into the Association other members at its discretion;* and we propose that it shall sit during the time of the Meeting or longer if necessary, *to regulate the general* *affairs of the Association, to manage the business of the session, and to settle the principal scientific arrangements for the ensuing Meeting.*

"We recommend however, that these arrangements should be first digested, and the particular advancement of every science specially looked to by SUB-COMMITTEES, which the general Committee shall appoint, placing severally on each those Members who are most conversant with the several branches of science. We propose that the Sub-Committees should *select the points in each science which most call for inquiry, and endeavour, under the authority of the General Committee, to engage competent persons to investigate them; that where the subject admits of the co-operation of scientific bodies, the Sub-Committees should recommend application to be made for that assistance; and that they should attend especially to the important object of obtaining Reports in which confidence may be placed, on the recent progress, the actual state and the deficiencies of every department of science.*

"On the last of these points I beg leave to quote the opinion of an able and zealous philosopher, the Professor of Mineralogy at Cambridge, who has been prevented by his public duties at the University from attending the Meeting, but who nevertheless takes the deepest interest in its objects. 'A collection of Reports,' says Professor Whewell, 'concerning the present state of science, drawn up by competent persons, is on all accounts much wanted; in order that scientific students may know where to begin their labours, and in order that those who pursue one branch of science may know how to communicate with the inquirer in another. For want of this knowledge we perpetually find speculations published which shew the greatest ignorance of what has been done and written on the subjects to which they refer, and which must give a very unfavourable impression of our acquirements to well informed foreigners.'

"I must add, however, to Mr. Whewell's remarks, that this want of knowledge is not by any means confined to our own country. I do not remember any where a more remarkable instance of it than that which occurred in France, to one of the most distinguished improvers of optical science. * As late as the year 1815 M. Fresnel re-observed Dr. Young's important law of the interference of the rays of light; he re-constructed the same mathematical formularies for the application of that law to various phenomena, and he announced these researches as new, in a memoir read before the French Academy. One of the members of that eminent body, † better acquainted with the *progress* of optics than the writer of the memoir, happily preserved an author, to whose original and profound researches the science has been so largely indebted, from printing as his own, the celebrated discoveries long before published by another philosopher; but had this information been earlier acquired, it would have saved all the time and labour which were lost in a retrograde inquiry. Even four years after this, when general attention had been drawn to the subject, and the prize offered by the Academy for the best Memoir on the diffraction of light was adjudged to M. Fresnel, the following animadversions were made by the Reporter ‡ on the unsuccessful competitor, whom he nevertheless represents as an experienced physical inquirer (' Physicien exercé'). ' L'auteur paraît n'avoir connu ni les travàux dont on est redevable au Dr. Thomas Young, ni le memoire que M. Fresnel avait inséré en 1816 dans les *Annales de Chimie et de Physique:* aussi la partie de son travail qui se rapporte aux influences que les rayons de la lumière exercent ou semblent exercer les uns sur les autres en se mêlant, loin de rien ajouter à ce qui était déjà connu, renferme plusieurs erreurs évidentes.

" Having thus entrusted to the Sub-Committees, Gentlemen, the most active share in advancing their respective sciences, and considered them as the instruments by which, through the medium of the General Committee, the impulse of the Association must be principally directed, we recommend that *they should not be dissolved with the Meeting at which they have been appointed, but continue in action till the Society re-assembles in the following year.* We do not presume that the persons who may happen to compose them, far removed as they may be from each other, may often have it in their power to meet in the interval; but we conceive that they will feel themselves engaged individually to keep the objects, which they have agreed to forward, in their view, and that the correspondence which they may be induced to maintain between themselves, and with the Officers of the Association, may be highly conducive to that combined exertion, the introduction of which into science would save much labour and ensure a better progress.

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* M. Fresnel. † M. Arago.

‡ Rapport lu à l'Academie 15 Mars, 1819. par M. Arago.

"The appointments to the HIGHER OFFICES of the Society, we propose should be not only annual, like the rest of the machinery by which it is kept in motion, but *annually changed;* in order at once to extend the interest which they may be supposed to kindle, and to limit the burthen which they will impose; leaving it for future consideration, whether the appointment of *more permanent* SECRETARIES may not be necessary to secure a steady and uniform course; and we recommend that, *when the General Committee is not sitting, the whole business of the Association shall be committed to the Office-bearers, assisted in scientific matters by the Members of the Sub-Committees, and in promoting the interests and objects of the Association in particular places, by the co-operation of* LOCAL COMMITTEES.

"I have now arrived at the last point to which it remains for me to advert—namely, the selection of the matter which is to engage the attention of the Meetings. It is evident that if the plan which I have thus far explained should be carried into effect, *the deliberations of the Committee to be formed at the present Meeting will provide the chief materials for the consideration of the next.* Those investigations and those surveys of science which shall have been suggested and procured by the Committees and Officers of the Association, will be entitled to the priority, though other communications may be accepted as far as the duration of the session will allow. Professor Whewell conceives 'that if this Meeting were to request from one or two among the most eminent men in the various branches of science, statements to be presented next year of the recent advances made in each department, and the subjects of research which they consider at present the most important and promising, such a request would be respectfully attended to.' Gentlemen, I do not doubt that it would; neither do I doubt that a simple request from this Meeting, would be successful in procuring new researches to be made; and should the funds of the Association hereafter admit of its going further, and offering PRIZES for particular investigations,—then would another prolific source be opened from which the scientific materials of our Meetings would be derived.

This, indeed, would only be another and a very powerful method of carrying on the system which we recommend of advancing science in *determinate lines of direction;* a method, which, though scarcely practised in this country, has been found eminently successful abroad. Dr. Brewster, I believe, will confirm me in this statement; for he will recollect that we owe to a prize-memoir, the first announcement of that great optical discovery, that light may be polarised by reflection from the surface of transparent bodies, a discovery which has since been productive of so many new and admirable observations, and which has been in no hands more fertile than his own; and he will remember also, that the first accurate investigation of all the phenomena of diffraction, and the first complete explanation of them by the doctrine of undulations, was contained in a memoir produced by a similar competition. * The award of medals, indeed, is an honourable encouragement not altogether withheld from successful researches in British science. But the principle on which they are given is of a more vague and general nature. The objects of these rewards have never been so *distinct* as to give a direct stimulus to *specific* inquiries. I may add, without imputing any mercenary feelings to men of science, that where the inquiry involves expense, a sum of money instead of a medal would, perhaps, be found a more useful and operative offer. It is well known that the important improvements which have been made in Chronometers have arisen, both in France and England, directly out of the public rewards munificently offered by the British Parliament; and I see no reason why adequate and well devised premiums should not be efficacious in the sciences as well as in the arts. No man, however high may be his literary or scientific pretensions, disdains to receive a pecuniary remuneration for the labour which he employs in the composition of his works; and there can be nothing derogatory to the character of a man of science in accepting a similar compensation for the successful exercise of his talents in researches especially which require an expenditure of money as well as time.

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* This Memoir, written by M. Fresnel, gained the physical prize proposed by the French Academy for 'a general examination of the phenomena of the diffraction of light,' in 1819.

"Such, Gentlemen, are the provisions of the plan which we propose for your consideration, and you will perceive that the methods which it embraces are new in practice, though not in principle. How otherwise indeed, than by new methods, can we hope to exchange the present desultory, and tardy progress of philosophy, for a more regular, energetic, and rapid advancement? There is a light in the distant horizon to which we have long eagerly looked, and complained that the current did not set us more quickly towards it; and the question now before you, Gentlemen, is no less than this: whether you are satisfied still to float passively on the waters, or whether you will raise the sail, and ply the oar, and take the helm into your hands. The methods now proposed are new, and therefore cannot place us in collision with any other

Society. It has never yet been seen in this country, that twenty Chemists for instance, or twenty Mineralogists, have met together, for the purpose of settling the nomenclature of their respective sciences, or attempting to fix with one consent the foundations on which they rest. It has never yet been seen, that the Chemical, Mineralogical, and Optical inquirers have assembled for the purpose of mutually explaining and learning what light the sciences of Chemistry, Mineralogy, and Optics are capable of reflecting reciprocally upon each other. You will perceive also, Gentlemen, that the Transactions, which we contemplate, are not to be collected by trespassing upon ground which was already occupied. In this respect there is on our part not only no design, but no possibility of interference. The course of an Association which meets once a year, and but for a few days, is necessarily different from that of more abiding Institutions; we have no time, if we wished it, to encroach upon the office, or to drain away the scientific resources of any other Society. It will be enough for us, if we can compress into the compass of a week's deliberations our own restricted objects,—specific investigations into fundamental points of science, reviews of its recent advances, and recommendations of subjects and methods for future research. Our plan contains within it a new power which may perhaps accelerate the wheels that are already in action; but its machinery is exclusively its own. The enlightened Institutions with which it hopes to be associated will regard it, therefore, not as a rival, but a coadjutor, and I trust it may prove such a coadjutor to them as the steam engine has been to all other kinds of mechanism, in every mine, and in every manufactory; a coadjutor, by the aid of whose powerful movements all their operations have been facilitated, and their productions multiplied a hundred fold.

" An enterprise like this has no danger to fear, but from a deficiency of zeal and union in carrying it into effect. It must undoubtedly fail, if it meets only with imperfect cooperation and cold support. But if it shall recommend itself to the full approbation of men of science, if it appears to you, Gentlemen, desirable to undertake it, the Association will have competent sponsors in the present assembly, who will stand pledged not only for its early encouragement, but for those future exertions which will be required to ensure its success. The Council of the Yorkshire Philosophical Society have not the presumption to dictate to this Meeting the course which it may be for the interests of Philosophy to pursue. They collected, in the first instance, the best opinions which they could obtain, before they proceeded to mature their plan, and they now wait for the opinion of the eminent persons who are here assembled, before they can assure themselves that it is as feasible in practice as it appears in theory. My own judgement waits with theirs, Gentlemen, on that of the High Priests of the temple, in the porch of which I am only an humble worshipper,—' parcus Deorum cultor et infrequens',—and I shall be the first to withdraw the resolutions which I am now ready to propose, unless I find them, by the deliberate and cordial concurrence of this Meeting, stamped with authority and endued with permanence."

A string of Resolutions in which were embodied the Objects and Rules of the Association as stated in Mr. Harcourt's speech, were then moved by him *seriatim*, and seconded by Dr. Brewster, by Mr. Murchison, President of the Geological Society of London, by Dr. Pearson, Vice-President of the Astronomical Society of London, by Mr. Robison, Secretary to the Royal Society of Edinburgh, &c. It was resolved unanimously—' that an Association be formed, to be called the British Association for the advancement of Science, the objects of which shall be to give a stronger impulse and more systematic direction to scientific inquiry, to promote the intercourse of those who cultivate science in different parts of the British

Empire, with one another, and with foreign philosophers, and to obtain a greater degree of national attention to the objects of science and a removal of any disadvantages of a public nature which impede its progress.' In the next resolution purporting ' that the members of Philosophical Societies in any part of the British Empire may become members of the Association on enrolling their names and contributing a small subscription', several alterations were proposed ; but it was finally passed, with the remaining resolutions, subject to the revisal and report of a Committee, constituted, according to the proposed plan, of all members present who had contributed a scientific paper to any Philosophical Society, which paper had been printed with its concurrence.

The thanks of the Meeting were then voted to the Chairman, and to the Rev. Mr. Harcourt for his statement of the plan of the Association, and the further consideration of it was adjourned till the following day.

On Wednesday, at 12 o'clock, Viscount Milton was again called to the chair, and the Meeting resumed its deliberations.

The Rev. W. V Harcourt, as chairman of the Committee, announced that the Resolution respecting the admission of members, in which alterations had been suggested on the previous day, had been revised, and that the Committee recommended that the following persons should be entitled to become members of the Association, upon subscribing an obligation to conform to its rules :—1st. all persons assembled at the present Meeting : 2nd. the Fellows and Members of all Chartered Societies in the British Empire : 3rd the Office-bearers and Members of the Council or Managing Committee of all Philosophical Societies :—4th. all Members of such a Society recommended by the Council or Committee thereof. They also proposed that the amount of the annual subscription should be One Pound, and that the composition for it should be Five Pounds; that the accounts should be audited annually by Auditors appointed by the Meeting itself, and that the Treasurer of the Yorkshire Philosophical Society should be Treasurer of the Association for the ensuing year.

Resolutions founded on these recommendations having been moved and seconded by Sir Thomas Brisbane, Mr. Robison, Mr. Dalton, Dr. Daubeny, the Rev. Mr. Scoresby, Dr. Pearson, Mr. Murchison, Mr. Marshall, &c. were passed by the Meeting, and it was resolved that any further revision which the rules might require should be left to the Committee.

On the motion of Mr. Murchison, seconded by Sir Thomas Brisbane, it was resolved, 'that the Rev. Mr. Harcourt be requested to publish for the Association the exposition of its objects and plan which he delivered yesterday.' Mr. Harcourt, in assenting to the desire of the Meeting, asked permission to revise what he had said, previous to its publication.

The business of forming the Association being completed, the Chairman proceeded to announce the papers to be read that morning on subjects of science, a report of the contents of which, as well as of the other communications made during the Session, will be found in the subsequent account of the Scientific Transactions.

On Thursday morning it was stated to the Meeting that the Committee had chosen Viscount Milton, the Rev. W. V. Harcourt, and the Secretaries of the Yorkshire Philosophical Society, to be the actual President, Vice-President, and Secretaries of the Association, that the Rev. Dr. Buckland had been chosen President *elect*, Dr. Brewster and the Rev. Professor Whewell Vice-Presidents *elect*, Dr. Daubeny and the Rev. Professor Powell, Secretaries *elect*, and that the next Meeting was appointed to be held at OXFORD.

On Saturday evening, the scientific communications and discussions having been closed by some remarks of Dr. Brewster, in which, adverting to a method of rendering visible the legends of ancient coins, he stated that he had never been more struck than by observing on an old coin, which he had placed on hot iron, an inscription make its appearance which he could read in a dark room, bearing the words 'benedictum sit nomen Dei'—Viscount Morpeth rose, and addressed the Meeting as follows:—

"Ladies and Gentlemen, an office has been assigned to me, which, although most entirely without any qualification or pretension to fulfil, I nevertheless accept, and will discharge, to the utmost of my ability, with the utmost alacrity. To the character of a man of science I have, unfortunately for myself, no claim whatsoever; but I have the good fortune to be intimately connected with the county, and consequently with the city of York; and I feel that they have both received great benefit and additional credit from the Meeting which is now brought to a conclusion. I say this, both with reference to the positive instruction we have received upon so many most interesting and important subjects, and also to the circumstance of this town and this edifice, already so much indebted to the zeal, perseverance, and ability of our Vice-President, having been now selected as the birth place of an Association, which, I trust, is destined to confer fresh lustre on British science, to give a new motive and a new guarantee to the friendly intercourse and continued concord of nations; to make farther inroads into the untravelled realm of discovery, and glean fresh harvests from the unexhausted field of Nature; to promote the comforts and augment the resources of civilized man; and to exalt above and over all the wonder-working hand of Heaven. For it will always come out from the pursuit of knowledge as surely as from the rusty medal of which we have this moment heard, '*Benedictum sit nomen Dei.*' Observe well, if you wish to appreciate rightly the true value and nobility of science, that while it proposes to itself distinct courses and definite spheres of its own, its general tendencies conduce to peace, and minister to piety. With these views and these hopes, it is natural and it is becoming that there should be mixed feelings of gratitude to those whose efforts have contributed so largely to our future progress. An assembly like that which I have the honour to address will appreciate, far more justly than I can pretend to do, the several papers and productions which have been submitted to our notice ; I have no scruple in leaving to your more competent and accurate discrimination, the indications of enlightened and powerful thought which they have exhibited ; but I feel sure that, if you pardon me for this intrusion of myself, the proposition I now make will command, upon this occasion, both the grave assent of science and the soft sanction of beauty. I move that the thanks of this Meeting be given to Dr. Brewster, and the other authors who have favoured us with their communications."

Mr. Murchison then rose, and 'on the part of Dr Brewster and his other scientific friends, begged leave to return thanks for the high honour done to the contributors of scientific memoirs, and for the valuable aid which had been received from the residents of York and its neighbourhood, in the promotion of the objects of the Meeting. He explained the motives which induced the original promoters of it to select the city of York for their first assembly. "To this city," he said, "as the cradle of the Association, we shall ever look back with gratitude ; and, whether we meet hereafter on the banks of the Isis, the Cam, or the Forth, to this spot, to this beautiful building, we shall still fondly revert, and hail with delight the period at which in our periodical revolution we shall return to this the point of our first attraction." Mr. Murchison, after expressing his sense of the kind reception and hospitality which the strangers there collected had experienced from the Archbishop, and from all classes of the inhabitants of the city and neighbourhood, concluded with a motion of thanks as follows :—' That the cultivators of science, here assembled, return their most grateful thanks to His Grace the Archbishop of York, and the other Members of the Yorkshire Philosophical Society, for the very liberal manner in which, by the use of their Halls and Museum, and by their obliging and unwearied efforts to provide every accommodation and comfort to those who have visited York on the present occasion, they have so essentially contributed to the success and prosperity of this Association.'

This motion was seconded by Dr. Brewster, and supported by Mr. Dalton. Mr. Vernon Harcourt, who was in the chair, then said, that "it was quite unnecessary, from the feelings which he knew to pervade the breasts of all, both strangers and residents, to put to the vote of the Meeting either of the proposals so eloquently brought forward. In the long period of its existence the ancient city of York had never greater reason to be proud, than of the genius and talent it contained within its walls at that moment, and of the honour it had acquired in being the birth-place of an Association destined, he firmly believed, greatly to enlarge the boundaries of science, and in so doing to advance the many interests of human nature which depend upon the improvement of knowledge." He then declared the meeting to be adjourned to Oxford.

PROCEEDINGS

OF THE

GENERAL COMMITTEE.

The General Committee was employed from the 27th of September to the 2nd of October in revising the Rules of the Association, in appointing the Office-bearers, in embodying the Local and Sub-Committees, and in receiving the recommendations of the latter, and making arrangements for carrying their suggestions into effect.

The care of completing the objects which the Committee had in view, and of printing the results of its deliberations, together with the proceedings and transactions of the General Meeting, was entrusted to the Officers of the Association at York, who have drawn up from its minutes the following summary of the Objects and Rules of the Association; to which are subjoined the appointments of Officers and Committees. The particulars of the scientific business brought before the General Committee are included in the account of the *recommendations of the Sub-Committees*, and the success which has attended the applications, made in the name of the Association, to eminent individuals, requesting them to undertake the services in science which had been so recommended, has been stated in the *Preface* to the Report.

OBJECTS OF THE ASSOCIATION.

The Association contemplates no interference with the ground occupied by other Institutions. Its objects are,—To give a stronger impulse and a more systematic direction to scientific inquiry,—to promote the intercourse of those who cultivate Science in different parts of the British Empire, with one another, and with foreign philosophers,—to obtain a more general attention to the objects of Science, and a removal of any disadvantages of a public kind, which impede its progress.

RULES.

MEMBERS.

All Persons who have attended the first Meeting shall be entitled to become Members of the Association, upon subscribing an obligation to conform to its Rules.

The Fellows and Members of Chartered Societies in the British Empire shall be entitled, in like manner, to become Members of the Association.

The Office-Bearers, and Members of the Councils or Managing Committees, of Philosophical Institutions shall be entitled, in like manner, to become Members of the Association.

All Members of a Philosophical Institution, recommended by its Council or Managing Committee, shall be entitled, in like manner, to become Members of the Association.

Persons not belonging to such Institutions shall be eligible, upon recommendation of the General Committee, to become Members of the Association.

SUBSCRIPTIONS.

The amount of the Annual Subscription shall be One Pound, to be paid in advance upon admission; and the amount of the composition in lieu thereof, Five Pounds.

Subscriptions shall be received by the Treasurer or Secretaries.

MEETINGS.

The Association shall meet annually, for one week, or longer. The place of each Meeting shall be appointed by the General Committee at the previous Meeting; and the Arrangements for it shall be entrusted to the Officers of the Association.

GENERAL COMMITTEE.

The General Committee shall sit during the time of the Meeting, or longer, to transact the Business of the Association. It shall consist of all Members present, who have communicated any scientific Paper to a Philosophical Society, which Paper has been printed in its Transactions, or with its concurrence.

Members of Philosophical Institutions, being Members of this Association, who may be sent as Deputies to any Meeting of the Association, shall be Members of the Committee for that Meeting.

SUB-COMMITTEES.

The General Committee shall appoint, at each Meeting, Sub-Committees, consisting severally of the Members most conversant with the several branches of Science, to advise together for the advancement thereof.

The Sub-Committees shall report what subjects of investigation they would particularly recommend to be prosecuted during the ensuing year, and brought under consideration at the next Meeting. They shall engage their own Members, or others, to undertake such investigations; and where the object admits of being assisted by the exertions of scientific bodies, they shall state the particulars in which it might be desirable for the General Committee to solicit the co-operation of such bodies.

The Sub-Committees shall procure Reports on the state and progress of particular Sciences, to be drawn up from time to time by competent persons, for the information of the Annual Meetings.

LOCAL COMMITTEES.

Local Committees shall be appointed, where necessary, by the General Committee, or by the Officers of the Association, to assist in promoting its objects.

Committees shall have the power of adding to their numbers those Members of the Association whose assistance they may desire.

OFFICERS.

A President, two Vice-Presidents, two or more Secretaries, and a Treasurer, shall be annually appointed by the General Committee.

PAPERS AND COMMUNICATIONS.

The General Committee shall appoint, at each Meeting, a Sub-Committee, to examine the papers which have been read, and the register of communications; to report what ought to be published, and to recommend the manner of publication. The Author of any paper or communication shall be at liberty to reserve his right of property therein.

ACCOUNTS.

The Accounts of the Association shall be audited, annually, by Auditors appointing by the Meeting.

OFFICERS.

President.—Charles William, Viscount Milton, F.R.S. &c. President of the Yorkshire Philosophical Society.

President elect.—Rev. William Buckland, D.D., F.R.S. &c. Professor of Geology and Mineralogy, Oxford.

Vice-President.—Rev. William Vernon Harcourt, F.R.S. &c. Vice-President of the Yorkshire Philosophical Society.

Vice-Presidents elect.—David Brewster, L.L.D., F.R.S. L. & E. Corresp. Member of the Institute of France, &c. Rev. William Whewell, F.R.S. &c. Professor of Mineralogy, Cambridge.

Treasurer.—Jonathan Gray, Esq. York.

Secretaries.—*York.*—William Gray, jun. John Phillips, F.G.S. &c. Secretaries of the Yorkshire Philosophical Society.

London.—Rev. J. Yates, F.L.S., G.S. &c.

Edinburgh.—J. Robison, Secretary of the Royal Society of Edinburgh, &c.

Oxford.—Charles Daubeny, M.D., F.R.S. Professor of Chemistry, Oxford. Rev. Baden Powell, F.R.S., Savilian Professor of Geometry, Oxford.

LOCAL COMMITTEES.

London.—G. B. Greenough, F.R.S., Vice-President of the Geological Society. R. I. Murchison, F.R.S., President of the Geological Society. Rev. James Yates, F.L.S. &c.

Edinburgh.—James D. Forbes, F.R.S. E., &c. James F. W. Johnston, A.M. John Robison, Sec. R.S.E. &c.

Dublin.—W. R. Hamilton, F.R.S. &c. Astronomer Royal of Ireland. Rev. B. Lloyd, D.D., Provost of Trinity College, Dublin.

India.—George Swinton, Esq. Chief Secretary to the Government in India, has been requested to form a Committee at Calcutta, with the aid of Major Benson, J. Calder, Esq., Dr. Christie, J. Herbert, Esq., J. A. Prinsep, Esq. and Sir Edward Ryan.

SUB-COMMITTEES.

MATHEMATICAL AND PHYSICAL SCIENCE.

David Brewster, L.L.D., F.R.S. L. & E. &c. Sir Thomas Brisbane, K.C.B., F.R.S. L. & E., Corresp. Member of the Institute of France. James D. Forbes, F.R.S.E., &c. W. R. Hamilton, F.R.S. &c. Rev. William Pearson, L.L.D., F.R.S., Vice-President of the Astronomical Society. Rev. Baden Powell, F.R.S., &c. Rev. William Scoresby, F.R.S. L. & E., Corresp. Member of the Institute of France. Rev. W. Whewell, F.R.S. &c. Rev. R. Willis, F.R.S. &c.

CHEMISTRY.

Rev. John Cumming, F.R.S. Professor of Chemistry, Cambridge. John Dalton, F.R.S., President of the Literary and Philosophical Society at Manchester, Corresp. Member of the Institute of France. Charles Daubeny, M.D., F.R.S. &c. Rev. W. V. Harcourt, F R.S. &c. J F. W. Johnston, A.M. Edward Turner, M.D., F.R.S. L. & E. Professor of Chemistry in the University of London. William West, Secretary of the Leeds Philosophical Society.

MINERALOGY.

Thomas Allan, F.R.S. L. & E. Robert Allan, F.G.S. &c. David Brewster, L.L.D., F.R.S. &c. J. F. W. Johnston, A.M. Rev. W. Whewell, F.R.S. &c.

GEOLOGY AND GEOGRAPHY.

Rev. William Buckland, D.D., F.R.S. &c. Rev. W. D. Conybeare, F.R.S. &c. Vice-President of the Geological Society, Corresp. Member of the Institute of France. Sir Philip Grey Egerton, Bart. F.R.S., &c. James D. Forbes, F.R.S. E., &c. G. B. Greenough, F.R.S. &c. William Hutton, F.G.S. &c. R. I. Murchison, F.R.S. &c. John Phillips, F.G.S. &c. Rev. Adam Sedgwick, F.R.S., &c. Woodwardian Professor, Cambridge. William Smith, Author of the Geological Map of England. Henry Witham, F.G.S. &c. Rev. James Yates, F.L.S., &c.

ZOOLOGY AND BOTANY.

Charles Daubeny, M.D., F.R.S. &c. J. K. Greville, M.D., F.R.S. E. &c. Rev. J. S. Henslow, F.L S., Professor of Botany, Cambridge. John Lindley, F.R.S., L.S. &c. Professor of Botany in the University of London. J. C. Prichard, M.D., F.R.S.

MECHANICAL ARTS.

J. H. Abraham, F.L.S. &c. John Robison, Sec. R.S. E. &c. Benjamin Rotch, F.S.A. &c.

RECOMMENDATIONS
OF THE
SUB-COMMITTEES.

COMMITTEE OF MATHEMATICAL AND PHYSICAL SCIENCE.

MATHEMATICS.

The Committee recommend that the Vice-President of the Association residing at Cambridge be requested to use his utmost efforts to procure, from some competent individual, a Report to the next Meeting on the progress of Mathematical Science.

ASTRONOMY.

That Professor Airy be requested to favour the Association with a Report on the state and progress of Physical Astronomy, together with such remarks on the improvements of Practical Astronomy, as he may deem it useful to add.

THEORY OF TIDES.

That J. W. Lubbock, Esq. be requested to furnish a statement of the means which we possess, or which we want, for forming accurate tables for calculating the time and height of High-Water at a given place.

METEOROLOGY.

That James D. Forbes, Esq. be requested to draw up a Report for the next Meeting, on the present state of Meteorological Science.

The Committee, considering that the science of Meteorology is in more want than, perhaps any other, of that systematic direction which it is one great object of the Association to give, has thought it advisable to propose the following points for investigation.

I. That the Association should employ all the means in its power to procure *a Register of the Thermometer during every hour of the day and night, to be kept at some military or naval station in the South of England.*

*Note.** Until the phenomena and distribution of diurnal temperature are more thoroughly understood than at present, we can hardly hope that any very sure footing has been obtained in the study of meteorology. The hourly register kept for several years at the military station of Leith Fort in lat. 56°. has shewn that we want nothing but the combination of a sufficient number of trustworthy observations, in order to obtain results of primary importance to the science, and which may one day enable us to arrive at the true form of the daily and annual curves of mean temperature with a precision almost mathematical. In order, however, to extend the benefit of such investigations, it is absolutely necessary that they should be pursued in different latitudes. The application to rendering available registers otherwise almost without value, from not being made at the proper hours, will be best illustrated by a reference to the account of the Leith observations. (Transactions of the Royal Society of Edinburgh, Vol. X.)

II. That the establishment of such an *hourly meteorological register* be pointed out as a highly interesting object, in reference especially to the important point of *intertropical* climate, *to* THE COMMITTEE OF THE ASSOCIATION IN INDIA.

III. That *the Committee in India* be requested to endeavour to institute such observations as may throw light on *the phenomena of the horary oscillations of the barometer, near the equator.* Should the concurrence of the Committee on these points be obtained, it would probably be desirable that the Association should take measures for sending out delicate and accurate instruments.

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* The notes appended to the Recommendations have been drawn up since the Meeting.

IV. That Mr. Phillips and Mr. Wm. Gray, jun. of York, be requested to undertake *a series of experiments on the comparative quantities of rain falling on the top of the great tower of York Minster, and on the ground near its base.* The Committee has been induced to propose this specific question in consequence of the local fitness of the situation, and the facilities offered for its solution by the authorities; but it is to be wished that similar experiments should be made elsewhere, that by an extended comparison of observations, light may be thrown upon the anomalies which have been observed at Paris and in other places.

V. That the Association should express its desire to receive *a satisfactory exposition of the theory of the moistened bulb hygrometer*, and that observers be also invited to institute *series of comparative experiments on the indications of the moistened thermometer and the temperature of the dew point.*

Note. These indications may be ascertained by Mr. Dalton's process, or by Mr. Daniell's Hygrometer, or by both. Notwithstanding the ingenious and laborious researches of Hutton, De Saussure, Leslie, Anderson, and Gay Lussac upon this subject, scientific deductions drawn from more extended experiments are greatly wanted. The simplicity and certainty of the experiment by which the cold produced by the evaporation of water is measured, renders an accurate theory of the result peculiarly desirable. The experimenter would do well to consult Mr. Dalton's views on the theory of Hygrometry, contained in his *Meteorological Essays*, and in *the Manchester Transactions*, and to examine the investigations of Professor Leslie, (*Relations of Heat and Moisture*, and *Supplement to the Encyclopædia Britannica, Article* METEOROLOGY;) of Dr. Anderson, (*Edinburgh Encyclopæ-*

dia, Article HYGROMETER,) and of M. Gay Lussac, *(Biot, Traité de Physique, Tom. II.)* A good series of observations at high temperatures will be found recorded in Nos. II. and III. of a Calcutta Journal, entitled, *Gleanings in Science.*

VI. That experiments *on the Decrease of Temperature at increasing heights in the Atmosphere* be recommended as an important subject for the contributions of observers.

Note. Series of observations for considerable periods of time on the mean temperature of the air at fixed hours, and at stations of which the difference of height has been accurately measured, are the most valuable. The best hours for observation are those which give most accurately the mean temperature of the period of observation. The hourly observations at Leith Fort have determined the hours which give the annual mean temperature in this country to be about 9¼ A. M. and 8½ P. M. Experimental balloons have lately been employed to assist the solution of this problem which is one of the most interesting in Meteorology, but the investigation of it is nearly brought to a stand for want of sufficiently numerous observations. The observer may be referred for information to Ramond, *Memoires sur la formule Barometrique de la Mechanique Celeste ;* to the Researches of Humboldt ; to Professor Leslie, *Supplement to the Encyclopædia Britannica, Article Climate ;* to Pouillet, *Elemens de Physique ;* to Mr. Atkinson's Paper on Refractions in the *Memoirs of the Astronomical Society ;* and to Mr. Ivory's Memoir on the same subject in *the Philosophical Transactions,* and his Papers in *the Annals of Philosophy.*

VII. That the observation of *the Temperature of Springs at different heights and depths* should be pointed out as an object of great interest, in prosecuting which insulated inquirers may render essential aid to science.

Note. When springs are copious, a few observations in the course of the year, suffice to give with great accuracy their mean temperature. The height of the springs above the mean level of the sea, and the depth of Artesian wells should be carefully observed, and where the corresponding mean temperature of the air can be obtained, it should be stated. In two points of view these observations are important, independently of the inferences which they may furnish as to the decrease of heat in the atmosphere. The great interest attached to the phenomenon of the progressive increase of temperature of the globe, as we descend through the Strata, renders of value observations on the temperature of springs at considerable heights, of springs in mines, and of those brought to the surface from some depths by the process of boring. This question has been treated with great success by M. CORDIER, in several Memoirs, some of which have been translated into English. Again, the researches of Humboldt, Buch, Wahlenberg, and most recently Kupffer in a Memoir on *Isogeothermal Lines*, read before the Academy of St. Petersburg, in 1829, have shewn that the temperature of the earth differs in many parts of the globe from that of the air, being generally in defect below lat. 56°. and in excess beyond it. The progressive increase of temperature with that of the depth in Artesian wells, and the deviation of the mean temperature of the Earth from that of the Air in different latitudes, have opened new fields for discussion; and by the zealous co-operation of observers cannot fail to present results of which, at present, we can form but an imperfect idea.

MAGNETISM.

It appears to the Committee highly desirable that a series of observations upon the *Intensity of Terrestrial*

Magnetism in various parts of England be made by some competent individual, similar to those which have recently been carried on in Scotland by Mr. Dunlop.

Should the Committee succeed in finding some individual ready to undertake the task, they propose that an application should be made to the Royal Society of Edinburgh, for permission to make use of the Standard Needle belonging to them, and constructed under the direction of Professor Hansteen of Christiania.

It appears to the Committee of considerable importance, that a certain number of observations should be made throughout Britain with *the Dipping Needle,* in order to reduce the Horizontal to the true Magnetic Intensity.

Note. The time of three hundred vibrations should be observed, and the methods of observation and reduction should be the same as have been employed and described by Humboldt, Hansteen, and others.

ELECTRO-MAGNETISM.

The Committee recommend as an important subject for farther prosecution, the examination of the *Electro-Magnetic condition of Metalliferous Veins.* The Committee would refer for the details of what has been already done upon this subject, to the Paper of Mr. Fox in the Philosophical Transactions for 1830, and would propose that the experiments should be extended to veins which traverse, as in some of our mines, horizontal and dissimilar strata.

OPTICS.

That Dr. Brewster be requested to prepare for the next Meeting, a Report on the progress of Optical Science.

ACOUSTICS.

That the Rev. Robert Willis be requested to prepare for the next Meeting, a Report on the state of our knowledge concerning the phenomena of Sound, and the additions which have been recently made to it.

HEAT.

That Professor Powell be requested to prepare for the next Meeting a similar Report respecting heat.

ELECTRICITY.

That Professor Cumming be requested to prepare for the next Meeting a similar Report on Thermo-Electricity, and the allied subjects in which recent discoveries have been made.

CHEMICAL COMMITTEE.

It appears to the Committee of supreme importance, that Chemists should be enabled, by the most accurate experiments, to agree in the *relative weights of the several elements*, *Hydrogen*, *Oxygen*, *and Azote*, or, which amounts to the same thing, that the specific gravity of the three gases should be ascertained in such a way as would insure the reasonable assent of all competent and unprejudiced judges.

They think it highly desirable that the doubts which remain respecting the *proportions of Azote*, *Oxygen*, *&c. in the atmosphere* should be removed; that the *proportions of Azote and Oxygen in nitrous gas and nitrous oxide* should be strictly determined; and that *the specific gravities of the compound gases in general* should be more accurately investigated.

They recommend that the members of this Committee, and British Chemists in general, be invited to make experiments on these subjects, and communicate their results to the next Meeting at Oxford.

That Mr. Johnston be requested to present to the next Meeting a view of the recent progress of Chemical science, especially in foreign countries.

That Dr. Daubeny be requested to undertake an investigation into the sources from which organic bodies derive their fixed principles.

That Mr. Johnston be requested to undertake the inquiries which have been suggested to the Committee into the comparative analysis of iron in the different stages of its manufacture.

That Mr. West be requested to pursue the experiments contemplated by him into the combinations of gaseous bodies when passed through heated tubes.

That the Rev. W. Vernon Harcourt be requested to prosecute the inquiries contemplated by him into the chemical phenomena from which the materiality of what are sometimes called etherial substances has been inferred.

MINERALOGICAL COMMITTEE.

The Committee recommend that the Rev. Professor Whewell be requested to present to the next Meeting a report on the state and progress of Mineralogy.

GEOLOGICAL AND GEOGRAPHICAL COMMITTEE.

The Committee recommend that Geologists be requested to examine strictly into the truth of that part of the theory of M. Elie de Beaumont, in its application to England, Scotland, and Ireland, which asserts that *the lines of disturbance of the strata assignable to the same age are parallel*, and that a report to the next Meeting on this subject should be procured.

That Mr. Phillips be requested to draw up, with such co-operation as he may procure, *a systematic catalogue of all the organized fossils of Great Britain and Ireland*, hitherto described, with such new species as he may have an opportunity of accurately examining, with notices of their localities and geological relations.

The Committee propose that Mr. Robert Stevenson, Civil Engineer, be requested to prepare a report upon the *waste and extension of the land on the East coast of Britain, and the question of the permanence of the relative level of the sea and land;* and that individuals who can furnish observations, be requested to correspond with him on the subject.*

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* Communications may be addressed to Robert Stevenson, Esq. Engineer to the Northern Lighthouse Board, Edinburgh.

The importance which, especially of late years, has been attached to facts of this nature, in illustration of the sciences of hydrography and geology, and the mass of uncombined materials which have recently been accumulating have induced the Committee to make the present recommendation; and in doing so it feels pleasure in being able to have in its view an individual whose practical acquaintance with the coast in general, and more particularly the minute survey made by him some years since, gives reason to expect from his report much important and accurate information.

BOTANICAL COMMITTEE.

The Committee recommend that Professor Lindley be requested to prepare for the next Meeting an account of the principal questions recently settled, or at present agitated, in the philosophy of Botany, whether in this country or abroad.

That Botanists in all parts of Great Britain and Ireland be invited to compose and communicate to the Meetings of the Association, Catalogues of *County or other local Floras* with *indications* of those species which have been *recently introduced*, of those which are *rare* or *very local*, and of those which *thrive, or which have become or are becoming extinct*, with such remarks as may be useful towards determining the connection which there may be between the *habitats* of particular plants and *the nature of the soil and the strata* upon which they grow; with statements of the *mean winter and summer temperature* of the air and water at the highest as well as the lowest elevation at which species occur, the *hygrometrical* condition of the air, and any other information of an historical, economical, and philosophical nature.

Note. If upon this plan a complete botanical survey of the British islands could be obtained, the results would be important when the Flora in the aggregate came to be compared with its relations of soil, climate, elevation, &c.

SCIENTIFIC TRANSACTIONS

OF THE

MEETING.

MONDAY EVENING.

Mr. Phillips, one of the Secretaries of the Yorkshire Philosophical Society, delivered an extemporaneous account of the most remarkable phenomena in the Geology of Yorkshire, illustrated by drawings and specimens selected from the Museum, and contributed by the visitors to the Meeting.

He observed that though the principal design in opening the Museum that evening was to promote mutual acquaintance and friendly intercourse, among those who were soon to engage in more important scientific labours, yet it was thought conducive to these objects that some observations should be offered by him from the Lecture Table, on the geological relations of the County in which they were assembled. In attempting therefore, a rapid sketch of some of the more prominent and peculiar features in the Geology of Yorkshire, he was influenced by a natural desire to call the attention of the eminent individuals now assembled in York to the phenomena most worthy of observation in passing through the County. He should thus have the opportunity of illustrating the value of some remarkable specimens which within a few hours had arrived for the inspection of the Meeting, and offer the most appropriate welcome which the City and County of York, and the Institution they had founded for the advancement of science, could give to those who now came amongst them to lay the basis of a wide Association for the same important purpose.

The points embraced in the continuation of Mr. Phillips's address were the following:

1. The peculiar character of the Carboniferous and Oolitic systems in Yorkshire,—both of these great systems of Calcareous Rocks being here diversified by large interpolations of sandy and argillaceous strata, with thin seams of Coal, and remains of Plants. In both systems these interpolations thicken to the northwards. Thus the nearly undivided mass of limestone under Ingleborough becomes separated into many distinct calcareous beds, with sandstones, shales, and bad coal, in Teesdale, Tynedale, and Swaledale, which are still further modified by the introduction of coarse pebbly sandstones, and workable seams of coal, in the western and northern parts of Northumberland:—and the Oolites of Lincolnshire, diminished in thickness and debased in purity, are almost lost in several hundred feet of sandstone, shale, and coal, which form the northeastern Moorlands of Yorkshire. Mr. Phillips referred these interpolations of sandstone, &c. to the originally littoral, or perhaps æstuary, situation of those parts of the calcareous deposit, while the thicker and more homogeneous limestone masses were probably produced under the deeper and more tranquil waters of the ancient oceans. The bearing of these deductions upon the important subject of the relative form and extent of the land and sea in this part of the globe at those periods respectively, was briefly illustrated.

2. The remarkable history of the deposit near Market Weighton (first observed by W. H. Dikes, Esq. Curator of the Hull Society and afterwards more completely investigated by some of the members of the Yorkshire Philosophical Society) in which the bones of several kinds of quadrupeds, including species considered as extinct, were found mingled with many shells belonging to thirteen existing species of land, marsh, and fresh-water mollusca, and covered with gravel from the neigh-

bouring hills, together with some larger stones from very distant localities.

3. The general character of the alluvial deposits, inclosing timber and many remains of quadrupeds, in the eastern part of Yorkshire, and the peculiar condition of some bones of deer obtained by Mr. W. Casson, from the Peat near Thorne. These bones appear to have been deprived of a large portion of their hardening earth, and are nearly in the state of leather,—quite flexible, and much altered from their original shape.

4. The traces of the action of the atmosphere in the rain channels which furrow the sides of the monumental stones of Boroughbridge, and form miniature valleys on the broad surfaces of the limestone scars on the mountains of Western Yorkshire and Westmoreland.

5. The occurrence of three specimens of unknown scaly fishes, with ferns and other fossil plants, in the ironstone bands in the lower part of the coal formation of Leeds and Bradford; two of them indicating an individual of considerable size, the third smaller, and perhaps of a distinct species.*

TUESDAY MORNING.

This morning having been almost exclusively occupied in the business of forming the Association, the only communication read was the following extract of a letter from Geo. Harvey Esq. F.R.S. L. & E.

"It was my intention had I been able to enjoy the privilege of attending at York, to have drawn the attention of the Meeting to the very remarkable circumstance of the Geometrical Analysis of the ancients having been cultivated with eminent success in the northern counties of England, and particularly in Lancashire. The proofs of this may be gathered from a variety of periodical works, devoted almost exclusively to this lofty and abstract pursuit. I have now before me several exquisitely beautiful specimens of the geometry of the Greeks, produced by men in what for distinction sake we call the inferior conditions of life. The phenomenon, for such it truly is, has long appeared to me a remarkable one, and deserving of an attentive consideration. Playfair, in one of his admirable papers in the Edinburgh Review, expressed a fear that the increasing taste for analytical science would at length drive the ancient geometry from its favoured retreat in the British Isles; but, at the time he made this desponding remark, the Professor seemed not to be aware that there then existed a devoted band of men in the North, resolutely bound to the pure and ancient forms of geometry, who in the midst of the tumults of steam engines cultivated it with unyielding ardour, preserving the sacred fire under circumstances which would seem from their nature most calculated to extinguish it. In many modern Publications, and occasionally in the Senate-House Problems proposed to the Candidates for Honours at Cambridge, questions are to be met with derived from this humble but honourable source.

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* Since the Meeting Mr. Phillips has had the opportunity of observing another specimen of a different species of fossil fish, in the possession of C. Rawson, Esq. from a still lower part of the coal strata at Halifax.

"The true cause of this remarkable phenomenon I have not been able clearly to trace. A taste for pure geometry, something like that for Entomology among the weavers of Spitalfields, may have been transmitted from father to son; but who was the distinguished individual first to create it, in the peculiar race of men here adverted to, seems not to be known. Surrounded with machinery, with the rich elements of mechanics in their most attractive forms, we should have imagined that a taste for mechanical combinations would have exclusively prevailed; and that inquiries locked up in the deep, and to them unapproachable, recesses of Plato, Pappus, Apollonius, and Euclid, would have met with but few cultivators. On the contrary, Porisms and Loci, Sections of Ratio and of Space, Inclinations and Tangencies,—subjects confined among the ancients to the very greatest minds, were here familiar to men whose condition in life was, to say the least, most unpropitious for the successful prosecution of such elevated and profound pursuits.

"The contrast also between the Northern and Southern parts of England, in this particular, was most remarkable. In the latter the torch of geometry emitted but a feeble ray; while in the former it existed in its purest and most splendid form. The two great restorers of the ancient geometry, Mathew Stewart and Robert Simson, it may be observed, lived in Scotland. Did their proximity encourage the growth of this spirit? or were their writings cultivated by some teacher of a village school, who communicated by a method, which genius of a transcendental order knows so well how to employ, a taste for these sublime inquiries, so that at length they gradually worked their way to the anvil and the loom?"

TUESDAY EVENING.

Mr. Abraham delivered a Lecture on Magnetism, and particularly described several useful applications of this science, which he had employed for the advantage of the arts. He exhibited the model of a machine used for *needle pointing*, the labouring at which has been found so prejudicial to health, owing to the particles of steel inhaled during the process, that although the men were employed at it only six hours in the day, few ever attained the age of forty years, most dying at thirty or thirty-five, and several not surviving twenty-five. These deadly effects had been in a great measure obviated by Mr. Abraham's contrivance of placing several magnets around a mouth-piece, to attract the particles of steel as they came off in the process of grinding, or floated in the dusty atmosphere of the small apartments. This invention, for which the Society of Arts awarded their large gold medal, has not been so universally employed in the manufactories as its importance deserved, owing partly to the disinclination of the workmen to adopt methods which, by rendering their avocation less injurious to health, should lower the price of their labour.

Mr. Abraham exhibited another Magnetical Instrument, intended to guard the eyes of the grinders from the dispersion of fragments of steel, communicated several poles to the same magnetic bar, and detailed the method which he had found most effectual for communicating, combining, and increasing the magnetic influence.

He then exhibited his simple process for demagnetizing the steel balance-wheels of watches. Having dipped a balance-wheel, previously rendered magnetical, into iron filings, and thus discovered the situation of its poles,—he presented to one of these, at the distance of an inch, the *similar pole* of a small magnet. The filings immediately fell from the wheel, and it was found to be perfectly demagnetized. (Mr. Abraham's inventions having been presented to the Society of Arts, are described in their Transactions, Vol. XL. p. 135, Vol. XLIII. p. 48, Vol. XLIV. p. 19.)

WEDNESDAY MORNING.

Dr. Brewster communicated a paper, which was read by Mr. Robison, presenting a general view of the progress of the science of mineralogy during the last thirty years, and of the principles of classification now adopted for minerals; and suggesting the propriety of adding to the four systems of crystallization now employed by Mohs and other mineralogists (the Rhomboidal, Pyramidal, Prismatic, and Tessular systems) a fifth, viz. the Composite system, as combining a series of crystalline structures not included under the other heads, and mostly discovered by the agency of polarized light. This new system of crystallization, the Author proposes to divide into two classes, the *first* of which embraces those minerals in which the physical properties of the individual crystals are not altered by the combination; and the *second*, those minerals in which the physical properties of the individual crystals are altered by the combination. These classes were again divided into different orders, and the Composite minerals were enumerated, which the Author proposed to place under each division.

The following Essay by Dr. Henry, was then read by Mr. Phillips.

An Estimate of the Philosophical Character of Dr. Priestley, by William Henry, M.D., F.R.S. &c. &c.

The principal source of the materials of the following pages, is the work, in which the discoveries of Dr. Priestley were originally announced to the public. It consists of six volumes in octavo, which were published by him, at intervals between the years 1774 and 1786; the first three under the title of "Experiments and Observations on different kinds of Air;" and the last three under that of "Experiments and Observations relating to various Branches of Natural Philosophy, with a continuation of the Observations on Air." These volumes were afterwards methodised by himself, and compressed into three octavos, which were printed in 1790. As a record of facts, and as a book of reference, the systematized work is to be preferred. But as affording materials for the history of that department of science, which Dr. Priestley cultivated with such extraordinary success; and, still more, for estimating the value of his discoveries, and adjusting his station as an experimental philosopher, the simple narrative, which he originally gave in the order of time, supplies the amplest and the firmest ground-work.

In every thing that respects the history of this branch of experimental philosophy, the writings and researches of Dr. Priestley, to which I have alluded, are peculiarly instructive. They are distinguished by great merits, and by great defects; the latter of which are wholly undisguised by their author. He unveils, with perfect frankness, the whole process of reasoning, which led to his discoveries; he pretends to no more sagacity than belonged to him, and sometimes disclaims even that to which he was fairly entitled; he freely acknowledges his mistakes, and candidly confesses when his success was the result of accident, rather than of judicious anticipation; and by writing historically and analytically, he exhibits the progressive improvement of his views, from their first dawnings, to their final and distinct development. Now, with whatever delight we may contemplate a systematic arrangement, the materials of which have been judiciously selected, and from which every thing has been excluded, that is not essential to the harmony of the general design, yet there can be no question that as elucidating the operations of the human mind, and enabling us to trace and appreciate its powers of invention and discovery, the analytic method of writing has decided advantages.

To estimate, justly, the extent of Dr. Priestley's claim to philosophical reputation, it is necessary to take into account the state of our knowledge of gaseous chemistry, at the time when he began his inquiries. Without underrating what had been already done by Van Helmont, Ray, Hooke, Mayow, Boyle, Hales, Macbride, Black, Cavendish, and some others, Priestley may be safely affirmed to have entered upon a field, which, though not altogether untilled, had yet been very imperfectly prepared to yield the rich harvest, which he afterwards gathered from it. The very implements, with which he was to work, were for the most part to be invented; and of the merits of those, which he did invent, it is a sufficient proof that they continue in use to this day, with no very important modifications. All his contrivances for collecting, transferring, and preserving different kinds of air, and for submitting those airs to the action of solid and liquid substances, were exceedingly simple, beautiful, and effectual. They were chiefly, too, the work of his own hands, or were constructed under his directions by unskilled persons; for the class of ingenious artists, from whom the chemical philosopher now derives such valuable aid, had not then been called into existence by the demands of the science. With a very limited knowledge of the general principles of chemistry, and almost without practice in its most common manipulations;—restricted by a narrow income, and at first with little pecuniary assistance from others;—compelled, too, to devote a large portion of his time to other pressing occupations, he nevertheless surmounted all obstacles; and in the career of discovery, outstripped many, who had long been exclusively devoted to science, and were richly provided with all appliances and means for its advancement.

It is well known that the accident of living near a public brewery at Leeds, first directed the attention of Dr. Priestley to pneumatic chemistry, by casually presenting to his observation the appearances attending the extinction of lighted chips of wood, in the gas which floats over fermenting liquors. He remarked, that the smoke formed distinct clouds floating on the surface of the atmosphere of the vessel, and that this mixture of air and smoke, when thrown over the sides of the vat, fell to the ground; from whence he deduced the greater weight of this sort of air than of atmospheric air. He next found that water imbibes the new air, and again abandons it when boiled or frozen. These more obvious properties of fixed air having been ascertained, he extended his inquiries to its other qualities and relations; and was afterwards led by analogy to the discovery of various other gases, and to the investigation of their characteristic properties.

It would be inconsistent with the scope of this Essay to give a full catalogue of Dr. Priestley's discoveries, or to enumerate more of them, than are necessary to a just estimate of his philosophical habits and character. He was the unquestionable author of our first knowledge of oxygen gas, of nitrous oxide, of muriatic, sulphurous, and fluor acid gases, of ammoniacal gas, and of its condensation into a solid form by the acid gases. Hydrogen gas was known before his time; but he greatly extended our acquaintance with its properties. Nitrous gas, barely discovered by Dr. Hales, was first investigated by Priestley, and applied by him to eudiometry. To the chemical history of the acids derived from nitre, he contributed a vast accession of original and most valuable facts. He seems to have been quite aware that those acids are essentially gaseous substances, and that they might be exhibited as such, provided a fluid could be found that is incapable of absorbing or acting upon them.* He obtained, and distinctly described,† the curious crystalline compound of sulphuric acid with the vapour of nitrous acid, or, more correctly, of sulphuric and hyponitrous acids, which, being of rare occurrence, was forgotten, and has since been rediscovered, like many other neglected anticipations of the same author. He greatly enlarged our knowledge of the important class of metals, and traced out many of their most interesting relations to oxygen and to acids. He unfolded, and illustrated by simple and beautiful experiments, distinct views of combustion; of the respiration of animals, both of the inferior and higher classes; of the changes produced in organized bodies by putrefaction, and of the causes that accelerate or retard that process; of the importance of azote as the characteristic ingredient of animal substances, obtainable by the action of dilute nitric acid on muscle and tendon; of the functions and economy of living vegetables; and of the relations and subserviency, which exist between the animal and vegetable kingdoms. After trying, without effect, a variety of methods, by which he expected to purify air vitiated by the breathing of animals, he discovered that its purity was restored by the growth of living and healthy vegetables, freely exposed to the solar light.

It is impossible to account for these, and a variety of other discoveries, of less importance singly, but forming altogether a tribute to science, greatly exceeding, in richness and extent, that of any contemporary, without pronouncing that their author must have been furnished by nature with intellectual powers, far surpassing the common average of human endowments. If we examine, with which of its various faculties the mind of Dr. Priestley was most eminently gifted, it will, I believe, be found that it was most remarkable for clearness and quickness of apprehension, and for rapidity and extent of association. On these qualities were founded that apparently intuitive perception of analogies, and that happy facility of tracing and pursuing them through all their consequences, which led to several of his most brilliant discoveries. Of these analogies many were just and legitimate, and have stood the test of examination by the clearer light, since reflected upon them from the improved condition of science. But, in other cases, his analogies were fanciful and unfounded, and led him far astray from the path, which might have conducted him directly to truth. It is curious, however, as he himself observes, that in missing one thing, of which he was in search, he often found another of greater value. In such cases, his vigilance seldom failed to put him in full possession of the treasure upon which he had stumbled. Finding by experience, how much chance had to do with the success of his investigations, he resolved to multiply experiments, with the view of increasing the numerical probabilities of discovery. We find him confessing, on one occasion, that he "was led on, by a random expectation of some change or other taking place." In other instances, he was influenced by theoretical views of so flimsy a texture, that they were dispersed by the first appeal to experiment. "These mistakes," he observes, "it was in my power to have concealed; but I was determined to show how little mystery there is in the business of experimental philosophy; and with how little sagacity, discoveries, which some persons are pleased to consider great and wonderful, have been made." Candid acknowledgments of this kind were, however, turned against him by persons envious of his growing fame; and it was asserted that *all* his discoveries, when not the fruits of plagiarism, were "lucky guesses," or owing to mere chance. * Such detractors, however, could not have been aware of the great amount of credit, that is due to the philosopher, who at once perceives the value of a casual observation, or of an unexpected result; who discriminates what facts are trivial, and what are important; and selects the latter, to guide him through difficult and perplexed mazes of investigation. In the words of D'Alembert, "*Ces hazards ne sont que pour ceux qui jouent bien.*"

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* Series I. Vol. ii. p. 175.

† Series II. Vol. i. p. 26.

The talents and qualifications, which are here represented as having characterized the mind of Dr. Priestley, though not of the rarest kind, or of the highest dignity, were yet such, as admirably adapted him for improving chemical science, at the time when he lived. What was then wanted, was a wider field of observation;—an enlarged sphere of chemical phenomena;—an acquaintance with a far greater number of individual bodies, than were then known; from the properties of which, and from those of their combinations, tentative approximations to general principles might at first be deduced; to be confirmed or corrected, enlarged or circumscribed, by future experience. It would have retarded the progress of science, and put off, to a far distant day, that affluence of new facts, which Priestley so rapidly accumulated, if he had stopped to investigate, with painful and rigid precision, all the minute circumstances of temperature, of specific gravity, of absolute and relative weights, and of crystalline structure, on which the more exact science of our own times is firmly based, and from which its evidences must henceforward be derived. Nor could such refined investigations have then been carried on with any success, on account of the imperfection of philosophical instruments. It would have been fruitless, also, at that time, to have indulged in speculations respecting the ultimate constitution of bodies;—speculations that have no solid ground-work, except in a class of facts developed within the last thirty-five years, all tending to establish the laws of combination in definite and in multiple proportions, and to support the still more extensive generalization, which has been reared by the genius of Dalton.

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* These charges, especially that of plagiarism, which had been unjustly advanced by some friends of Dr. Higgins, were triumphantly repelled by Dr. Priestley, in a pamphlet entitled, "Philosophical Empiricism," published in 1775.

It was, indeed, by the activity of his intellectual faculties, rather than by their reach or vigour, that Dr. Priestley was enabled to render such important services to natural science. We should look, in vain, in any thing that he has achieved, for demonstrations of that powerful and sustained attention, which enables the mind to institute close and accurate comparisons;—to trace resemblances that are far from obvious;—and to discriminate differences that are recondite and obscure The analogies, which caught his observation, lay near the surface, and were eagerly and hastily pursued; often, indeed, beyond the boundaries, within which they ought to have been circumscribed. Quick as his mind was in the perception of resemblances, it appears (probably for that reason) to have been little adapted for those profound and cautious abstractions, which supply the only solid foundations of general laws. In sober, patient, and successful induction, Priestley must yield the palm to many others, who, though far less fertile than himself in new and happy combinations of thought, surpassed him in the use of a searching and rigorous logic; in the art of advancing, by secure steps, from phenomena to general conclusions;—and again in the employment of general axioms as the instruments of farther discoveries.

Among the defects of his philosophical habits, may be remarked, that he frequently pursued an object of inquiry too exclusively, neglecting others, which were necessarily connected with it, and which, if investigated, would have thrown great light on the main research. As an instance, may be mentioned his omitting to examine the relation of gases to water. This relation, of which he had indistinct glimpses, was a source of perpetual embarassment to him, and led him to imagine changes in the intimate constitution of gases, which were in fact due to nothing more than an interchange of place between the gas in the water and that above the water, or between the former and the external atmosphere. Thus he erroneously supposed that hydrogen gas was transmuted into azotic gas, by remaining long confined by the water of a pneumatic cistern. The same eager direction of his mind to a single object, caused him, also, to overlook several new substances, which he must necessarily have obtained, and which, by a more watchful care, he might have secured and identified. At a very early period of his inquiries, (viz. before November, 1771), he was in possession of oxygen gas from saltpetre, and had remarked its striking effect on the flame of a candle; but he pursued the subject no farther until August 1774, when he again procured the same kind of gas from the red oxide of mercury, and, in a less pure state, from red lead. Placed thus a second time within his grasp, he did not omit to make prize of this, his greatest, discovery. He must, also, have obtained chlorine by the solution of manganese in spirit of salt; but it escaped his notice, because, being received over mercury, the gas was instantly absorbed. * If he had employed a bladder, as Scheele afterwards did, to collect the product of the same materials, he could not have failed to anticipate the Swedish philosopher, in a discovery not less important than that of oxygen gas. Carbonic oxide early and repeatedly presented itself to his observation, without his being aware of its true distinctions from other kinds of inflammable air; and it was reserved for Mr. Cruickshank of Woolwich to unfold its real nature and characters. It is remarkable, also, that in various parts of his works, Dr. Priestley has stated facts, that might have given him a hint of the law, since unfolded by the sagacity of M. Gay Lussac, 'that gaseous substances combine in definite volumes.'

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* Series II. p. 253.

He shows that

1 measure of fixed air unites with $1\frac{6}{7}$ measure of alkaline air,
1 measure of sulphurous acid with 2 measures of do.
1 measure of fluor acid with 2 measures of do.
1 measure of oxygen gas with 2 measures nitrous, very nearly;

and that by the decomposition of 1 vol. of ammonia, 3 vols. of hydrogen are evolved.

Let not, however, failures such as these, to reap all that was within his compass, derogate more than their due share from the merits of Dr. Priestley; for they may be traced to that very ardour of temperament, which, though to a certain degree a disqualification for close and correct observation, was the vital and sustaining principle of his zealous devotion to the pursuit of scientific truth. Let it be remembered, that philosophers of the loftiest pretensions are chargeable with similar oversights;—that even Kepler and Newton overlooked discoveries, upon the very confines of which they trod, but which they left to confer glory on the names of less illustrious followers.

Of the general correctness of Dr. Priestley's experiments, it is but justice to him to speak with decided approbation. In some instances, it must be acknowledged, that his results have been rectified by subsequent inquirers, chiefly as respects quantities and proportions. But of the immense number of new facts originating with him, it is surprising how very few are at variance with recent and correct observations. Even in these few examples, his errors may be traced to causes connected with the actual condition of science at the time; sometimes to the use of impure substances, or to the imperfection of his instruments of research; but never to carelessness of inquiry or negligence of truth. Nor was he more remarkable for the zeal, with which he sought satisfactory evidence, than for the fidelity, with which he reported it. In no one instance is he chargeable with mis-stating, or even with straining or colouring, a fact, to suit an hypothesis. And though this praise may, doubtless, be conceded to the great majority of experimental philosophers, yet Dr. Priestley was singularly exempt from that disposition to view phenomena through a coloured medium, which sometimes steals imperceptibly over minds of the greatest general probity. This security he owed to his freedom from all undue attachment to hypotheses, and to the facility, with which he was accustomed to frame and abandon them ;—a facility resulting not from habit only, but from principle. " Hypotheses" he pronounces, in one place, " to be a cheap commodity ;" in another to be " of no value except as the parents of facts ;" and so far as he was himself concerned, he exhorts his readers " to consider new facts only as discoveries, and to draw conclusions for themselves." The only exception to this general praise is to be found in the pertinacity with which he adhered, to the last, to the Stahlian hypothesis of phlogiston; and in the anxiety which he evinced to reconcile to it new phenomena, which were considered by almost all other philosophers as proofs of its utter unsoundness. But this anxiety, it must be remembered, was chiefly apparent at a period of life, when most men feel a reluctance to change the principle of arrangement, by which they have been long accustomed to class the multifarious particulars of their knowledge.

In all those feelings and habits that connect the purest morals with the highest philosophy, (and that there is such a connection no one can doubt), Dr. Priestley is entitled to unqualified esteem and admiration. Attached to science by the most generous motives, he pursued it with an entire disregard to his own peculiar interests. He neither sought, nor accepted when offered, any pecuniary aid in his philosophical pursuits, that did not leave him in possession of the most complete independence of thought and of action. Free from all little jealousies of contemporaries or rivals, he earnestly invited other labourers into the field, which he was cultivating ; gave publicity, in his own volumes, to their experiments ; and, with true candour, was as ready to record the evidence which contradicted, as that which confirmed, his own views and results. Every hint, which he had derived from the writings or conversation of others, was unreservedly acknowledged. As the best way of accelerating the progress of science, he recommended and practised the early publication of all discoveries; though quite aware that, in his own case, more durable fame would often have resulted from a delayed and more finished performance. "Those persons," he remarks, "are very properly disappointed, who, for the sake of a little more reputation, delay publishing their discoveries, till they are anticipated by others."

In perfect consistency with that liberality of temper, which has been ascribed to Dr. Priestley, it may be remarked also, that he took the most enlarged views of the scope and objects of Natural Science. In various passages of his works he has enforced, with warm and impressive eloquence, the considerations, that flow from the contemplation of those arrangements in the natural world, which are not only perfect in themselves, but are essential parts of one grand and harmonious design. He strenuously recommends experimental philosophy as an agreeable relief from employments, that excite the feelings or overstrain the attention; and he proposes it to the young, the high-born, and the affluent, as a source of pleasure unalloyed with the anxieties and agitations of public life. He regarded the benefits of its investigations, not merely as issuing in the acquirement of new facts, however striking and valuable; nor yet in the deduction of general principles, however sound and important; but as having a necessary tendency to increase the intellectual power and energy of man, and to exalt human nature to the highest dignity, of which it is susceptible. The springs of such enquiries he represents as inexhaustible; and the prospects, that may be gained by successive advances in knowledge, as in themselves "truly sublime and glorious."

Into our estimate of the intellectual character of an individual, the extent and the comprehensiveness of his studies must always enter as an essential element. Of Dr. Priestley it may be justly affirmed, that few men have taken a wider range over the vast and diversified field of human knowledge. In devoting, through the greater part of his life, a large portion of his attention to theological pursuits, he fulfilled, what he strongly felt to be his primary duty as a minister of religion. This is not the fit occasion to pronounce an opinion of the fruits of those inquiries, related as they are to topics, which still continue to be agitated as matters of earnest controversy. In Ethics, in Metaphysics, in the philosophy of Language, and in that of General History, he expatiated largely. He has given particular histories of the Sciences of Electricity and of Optics, characterized by strict impartiality, and by great perspicuity of language and arrangement. Of the mathematics, he appears to have had only a general or elementary knowledge; nor, perhaps, did the original qualities, or acquired habits, of his mind fit him to excel in the exact sciences. On the whole, though Dr. Priestley may have been surpassed by many, in vigour of understanding and capacity for profound research, yet it would be difficult to produce an instance of a writer more eminent for the variety and versatility of his talents, or more meritorious for their zealous, unwearied, and productive employment.

APPENDIX.

Since the foregoing pages were written, I have added a few remarks on a passage contained in a recent work of Victor Cousin, in which that writer has committed a material error as to the origin of Dr. Priestley's philosophical discoveries. "La chimie," he observes, "est une création du dixhuitième siècle, une création de la France; c'est l'Europe entière qui a appelé chimie Française le mouvement qui a imprimé à cette belle science une impulsion si forte et une direction si sage; c'est à l'exemple et sur les traces de Lavoisier, de Guyton, de Fourcroy, de Berthollet, de

Vauquelin, que se sont formés et que marchent encore les grands chimistes étrangers, ici Priestley et Davy; là Klaproth et Berzelius." (Cours de l'Histoire de la Philosophie, tom. i. p. 25.)

It is to be lamented that so enlightened a writer as Victor Cousin, yielding, in this instance, to the seduction of national vanity, should have advanced pretensions in behalf of his countrymen, which have no foundation in truth or justice. Nothing can be more absurd or unprofitable than to claim honours in science, either for individuals or for nations, the title to which may be at once set aside by an appeal to public and authentic records.

It was in England, not in France, that the first decided advances were made in our knowledge of elastic fluids. To say nothing of anterior writers, Dr. Black had traced the causticity acquired by alkalies, and by certain earths, to their being freed from combination with fixed air; and Mr. Cavendish, in 1766, had enlarged our knowledge of that gas and of inflammable air. In England, the value of these discoveries was fully appreciated; in France, little or no attention was paid to them, till the philosophers of that country were roused by the striking phenomena exhibited by the experiments of Priestley. Lavoisier, it is true, had been led, by an examination of evidence derived from previous writers, to discard the hypothesis of phlogiston. The discovery of oxygen gas by Dr. Priestley not only completed the demonstration of its fallacy, but served as the corner-stone of a more sound and consistent theory. By a series of researches executed at great expence, and with consummate skill, the French philosopher verified in some cases, and corrected in others, the results of his predecessors, and added new and important observations of his own. Upon these, united, he founded that beautiful system of general laws, chiefly relating to the absorption of oxygen by combustible bodies, and to the constitution of acids, to which, alone, the epithet of the Antiphlogistic or French theory of chemistry is properly applied. Of the genius manifested in the construction of that system, and the taste apparent in its exposition, it is scarcely possible to speak with too much praise. But it is inverting the order of time to assert, that it had any share in giving origin to the researches of Priestley, which were not only anterior to the French theory, but were carried on under the influence of precisely opposite views. This, too, may be asserted of the discoveries of Scheele, who, at the same period with Dr. Priestley, was following, in a distant part of Europe, a scarcely less illustrious career.

It is the natural progress of most generalizations in science, that at first too hasty and comprehensive, they require to be narrowed as new facts arise. This has happened to the theory of Lavoisier, in consequence of its having been discovered, that combustion is not necessarily accompanied with an absorption of oxygen, and that acids exist independently of oxygen, regarded by him as the general acidifying principle. But after all the deductions, that can justly be made on that account from the merits of Lavoisier, he must still hold one of the highest places among those illustrious men, who have advanced chemistry to its present rank among the physical sciences. It is deeply to be lamented that his fame, otherwise unsullied, should have been stained by his want of candour and justice to Dr. Priestley, in appropriating to himself the discovery of oxygen gas. This charge, often preferred and never answered, would not have been revived in this place, but for the claim so recently and indiscreetly advanced by M. Victor Cousin. To the credit of Dr. Priestley it may be observed, that in asserting his own right, he exercised more forbearance, than could reasonably have been expected under such circumstances. In an unpublished letter to a friend, he thus alludes to the subject of M. Lavoisier's plagiarism. "He," (M. Lavoisier) "is an *Intendant of the Finances*, and has much public business, but finds leisure for various philosophical pursuits, for which he is exceedingly well qualified. He ought to have acknowledged that my giving him an account of the air

I had got from *Mercurius Calcinatus*, and buying a quantity of M. Cadet while I was at Paris, led him to try what air it yielded, which he did presently after I left. I have, however, barely hinted at this in my second volume." * The communication alluded to was made by Dr. Priestley to M. Lavoisier in October, 1774; and the Memoir, in which the latter assumes to himself the discovery that *mercurius calcinatus* (red oxide of mercury) affords oxygen gas when distilled *per se*, was not read to the Academy of Sciences before April, 1775. † In evincing so little irritability about his own claim, and leaving its vindication with calm and just confidence to posterity, the English philosopher has lost nothing of the honour of that discovery, which is now awarded to him, by men of science of every country, as solely and undividedly his own.

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* Letter to the late Mr. Henry, dated Calne, Dec. 31, 1775.

† See an Abstract of this Memoir in the *Journal de Rozier*, Mai, 1775.

WEDNESDAY EVENING.

Mr. R. Potter, jun. read a *description of his new construction of Sir Isaac Newton's reflecting microscope,* and exhibited the instrument, with a variety of finely executed elliptical mirrors, &c. In the reflecting microscope of Sir Isaac Newton the object is placed directly in the focus of the speculum, and the image is formed in that of the eyeglass ; and thus, having only one additional surface in the essential parts of the instrument it must be considered as next in simplicity to the single-lens microscope.

In this construction the object must be placed in the axis of the tube, where it is difficult to provide sufficient illumination, and it is this defect which the new construction is intended to obviate. A large hole is cut in the tube between the object and the speculum, to allow the light to fall upon the former when it requires to be viewed as an opaque object, and all the lower parts of the tube are lined with black velvet, to absorb the irregular light. A large lens is also occasionally employed to concentrate the light. Transparent objects require a small oval mirror to be placed immediately behind them ; this mirror receiving a concentrated light from a lens, fixed in a sliding piece on the side of the tube, reflects it through the object to the speculum. The objects, to be placed in the centre of the tube, are attached to thin brass wires in wooden handles, and kept separately in a box.

This construction of the reflecting microscope has a great advantage in point of distinctness, from there being only one necessary reflection between the object and the image, and will be found particularly suitable for the examination of opaque objects, on account of the large aperture of the speculum, compared to its focal length.—It is therefore recommended as an excellent working tool to the scientific enquirer, who will disregard the little trouble required in its management.

The Secretary then read a description by Dr. Brewster of an *Instrument for distinguishing Precious Stones and Minerals.* The object of this instrument is to distinguish mineral bodies by the relative quantity and colour of the light reflected from their surfaces, when placed in contact with fluids of different refractive powers. The surfaces employed for this purpose may be either natural or artificial, so that the method is equally applicable to regular crystals, and to gems cut into artificial forms. If a fluid, of a given refractive and dispersive power, is placed on the surface of a mineral of the very same refractive and dispersive power, there will be no light whatever reflected from their separating surface; but in proportion as the fluid and the solid differ in these respects, in the same proportion will the quantities of light differ which are reflected at the separating surface, and its colour will undergo corresponding changes.

The principal part of the instrument is a triangular prism of glass, between the lower surface of which and the upper surface of the mineral the oil is placed. This oil will form a parallel film, but, by the mechanism of the instrument, the two surfaces which bound this film can be inclined to each other, so that an eye looking into the prism will see at once the images of a luminous body, such as the sun, &c, reflected from the separating surface of the oil and the prism, and from that of the oil and the mineral. The first of these images is constant both in its colour and quantity of light, while the oil is the same, but the second will vary with the mineral. The comparison of the colour and quantity of light obtained from different minerals furnishes the nicest tests for discriminating them.

The author illustrated his explanations of the principle of the instrument by means of diagrams, and the instrument itself, as constructed by Dollond, was exhibited to the Meeting.

THURSDAY MORNING.

Mr. Dalton read a paper written for the Literary and Philosophical Society of Manchester, containing a series of *experiments on the quantity of food, taken by a person in health, compared with the quantity of the different secretions; with chemical remarks and deductions.*

Mr. Dalton, whose regular habits of life and uniform good health enabled him to make these Experiments upon himself to great advantage, commenced them about 40 years since at Kendal, and prosecuted them for periods of a week or a fortnight at various seasons of the year, to ascertain the proportion between the weight of food, and the ordinary evacuations. Particular observations were made on the effects occasioned by drinking an infusion of Carbonate of Potash, and a train of experiments was continued for three weeks to determine the loss of weight by perspiration for the whole day, and for certain hours of the morning, afternoon, and night. The mean daily loss by perspiration was 37½ oz.

From these experiments, the state of organic chemistry 40 years since did not permit Mr. Dalton to make any deductions, but he was now enabled to return to the subject with the powerful aid of exact analysis. He shewed that the quantity of Carbon contained in the solid and liquid food taken into the stomach daily was .. .. .. 11½ oz.
of which there passes off sensibly 1

Leaving for the waste by insensible perspiration 10½ oz.

Mr. Dalton had ascertained from experiments on his own respiration that the quantity of Carbonic acid gas expelled from his lungs contained of Carbon .. 10¼ oz.

His daily loss by perspiration of aqueous vapour from the lungs was at the same time found to be 20½ oz. to which adding 10¼ oz. Carbon, we have the total loss by perspiration from the lungs, 30¾ oz., which taken from 37½, leaves 6¾ oz.

per day for the insensible perspiration of the skin, of which $6\frac{1}{2}$ oz. are water, and $\frac{1}{4}$ oz. is Carbon.

The element Azote, of which $1\frac{1}{2}$ oz. per day was taken into the stomach, appears to have passed off by evacuation. Of the 6 lbs of aliment taken in a day, 1 lb. consists of Azote and Carbon, and 5 lbs. of water, and nearly the whole quantity of food taken into the stomach enters the circulation,—the residual part constituting only $\frac{1}{18}$ of the whole,—of which about half is thrown off by the kidneys, more or less according to season and climate, another part passes off by insensible perspiration, $\frac{5}{6}$ being perspired from the lungs, and $\frac{1}{6}$ from the skin.

The next paper was read by Mr. R. Potter, jun. and contained his *remarks on a theory of the late M. Fresnel concerning the reflection of light from the surfaces of bodies.*

M. Fresnel in a paper read before the Academy of Sciences in Paris, and of which he published an abstract in the Annales de Chimie for 1820, proposed to account for the reflection of light at the surfaces of bodies, on the undulatory theory, by its impinging on the ponderable particles. He appears to have afterwards in some measure modified his views, but not, to the writer's knowledge, ever to have *formally* renounced his former proposition. Hence the subject may fairly be considered as still open to discussion: and the manner of considering reflection, as caused by the light striking the ponderable parts of bodies, being the one which almost every person would recur to, on first commencing the study of physical optics, it will perhaps be considered not entirely useless, on this account also, to enter into a regular examination of M. Fresnel's hypothesis.

Now if reflection were caused immediately by the ponderable matter in any surfaces, it ought to be some function of the quantity of matter in the bodies furnishing such surfaces; but even a superficial view of the small quantity of light reflected at a perpendicular incidence in transparent bodies, compared with the large quantity reflected at the same incidence in metals, is sufficient to convince us that reflection has no relation to the densities of bodies. To remove, however, an objection which might be urged, that the extension of the particles of bodies may not bear an invariable ratio to their weight, it will be necessary to examine cases where a metal, by combining with a new element or elements, has acquired the property of transparency, and thus possesses an evident refractive power. By knowing the comparative weights of the metal in the two states, it is easy to calculate the relative numbers of similar particles in equal surfaces, and of course to calculate the relative quantities of light which ought to be reflected, if caused only by the ponderable particles of metal. Experience is so much at variance with the hypothesis under examination, that the other elements in the compound may be considered even as lending no assistance at all.

The results obtained by Photometry shew that the metals, with the exception, perhaps, of two or three, reflect two-thirds and upwards, of the light incident perpendicularly on them. For the reflective power of the transparent bodies we may use the analytical formula of M. Poisson, (which was admitted by M. Fresnel,) to calculate it from the refractive index, though it gives most probably, in all cases, quantities too large and of course proportionally favourable to the controverted hypothesis.

Proceeding in this manner for glass of Antimony, the reflection according to Fresnel's hypothesis, should have been at least 46 rays of every 100 incident, whilst the quantity given by the analytical formula is only 19.3 rays.

In the white oxide of arsenic or arsenious acid the reflection should have been 31.9 (taking even the old number for the specific gravity of the metal) in place of less than 8.3 which it really is.

In the red silver ore it should have been at least 37.5 rays if the hypothesis were correct, instead of less than 19.2 as determined by the analytical formula.

If the metals of the alkalis and earths might be assumed of equal reflective powers with the other metals, and it is most likely they are, the chloride of sodium would form one of the strongest cases which could be brought forward; for whilst it really reflects only about two per cent, it ought according to the controverted hypothesis to have reflected upwards of 60 rays of every 100 incident, from the metal in the chloride being almost as dense as in its proper state.

Mr. Wm. Hutton read a paper *upon the Whin Sill of Cumberland and Northumberland.*

A bed of Stratiform Basalt is well known to occur extensively in connection with the Mountain Limestone Rocks of the North of England, aud is called in Alston Moor and the adjoining mining districts, "the Whin Sill." This *bed* has naturally a good deal of geological interest attached to it, from the circumstance that rocks of its class are *generally* found under conditions which indicate that their production is entirely independent both as to antiquity and origin of that of the Strata which they divide,—and upon which, at the points of contact, they have produced mechanical and chemical changes which afford the most conclusive evidence of their violent intrusion since the deposition and consolidation of those Strata.

The Whin Sill is visible in many of the streams running into the South Tyne from the West and may be seen in the bed of the Tyne itself at Tyne-head. It occurs in the bed of the Wear, in Teesdale, where it is extensively developed, and in the Lune, in short, throughout the whole district wherever the water-courses, or the operations of the miner, pierce deep enough; its basset edge may also be traced almost uninterruptedly from Helton in Westmoreland to Tindale Fell in Northumberland.—Here the whole carboniferous formation is broken through by the "great Stublick Dyke" which throws down the Whin Sill along with the other beds of the formation, to an immense depth; its edge reappears on the north side of this dyke at Wall Town Crags, near Glenwhelt, in Northumberland, rising rapidly to the North, and from this spot it can be traced almost throughout the county of Northumberland to the sea coast near Newton; it occurs again with other beds of the carboniferous formation in consequence of a general depression of the strata a little south of Bamborough, from whence it sweeps round by Belford to Kyloe on the coast, near to which place it finally disappears.

In the course of this bed northward from Alston Moor, it appears to rise in the series of strata, from ‘ the *putting in*’ of new beds, as the miners term it; and of course it is found in contact with all the varieties of rock composing the carboniferous formation. It is generally in one bed, sometimes in two, and once at least it occurs in three beds.

The action of heat in hardening the rocks near it and rendering the limestone crystalline, can generally be observed accompanying this bed, but no where to such an extent as in High Teesdale.

After an attentive examination of the appearances exhibited throughout its whole course, the conclusion of the writer is, that this bed of Basalt was produced by an overflowing of lava during the deposition of the Mountain Limestone Group, after those beds, which are found below, and prior to those above it.

After Mr. Hutton's Paper had been read,

Mr. Murchison rose to bear testimony to the general value and accuracy of the memoir. His own observations, however, on the evident violence which in High Teesdale accompanied the arrangement of the basaltic matter, the altered character of the limestone, sandstone, and shale both above and below it, and the occasional ramification of its substance through the contiguous and superior Strata, led him to confirm the opinion of Professor Sedgwick, that the Whin of that district had not been injected into the Carboniferous Limestone till after the deposition of that whole system of rocks. He thought it very desirable that the views of Professor Sedgwick respecting the Whin Dykes of Durham should be further pursued, with reference to this theory, to ascertain whether they were emanations from the great Whin Sill, or were posterior to it. Some of these Dykes break off into various branches all pointing to the Whin Sill, and thus appearing at least to be related to it in age.

Mr. Phillips had formerly examined the whole range of the Whin Sill, and was happy in being able to agree in opinion with both the Author of the Paper and the President of the Geological Society. The definite geological situation, between the same Limestone bands, of the great portion of the Basalt, its wide lateral extension, the general limitation of the effects of its heat upon the contiguous rocks to the lower surface of the mass, its course for miles together without furnishing a single dyke, or even entering at all into the many natural fissures of the Limestone, and its division by metallic veins, obliged him to infer that a large portion of the Whin Sill was formed by periodical submarine eruptions of Lava, at intervals during the deposition of the Carboniferous Strata with which it is associated. On the other hand, the instances described of violent eruption and local intrusion of the Basalt into the Strata above its general range, seemed to shew that Teesdale had been the theatre of more than one such eruption. The views of Professor Sedgwick and Mr. Hutton were, therefore, by no means irreconcilable, and it might be very possible hereafter to fix upon the foci or centres from which, as probably at Caldron Snout in Teesdale, the principal basaltic *coulées* had flowed.

Mr. Johnston gave an account of *the Metal Vanadium and its ores*.

He stated that this metal was first observed, though without being distinctly made out, by Del Rio in Mexico 25 years ago, and afterwards rediscovered by Seftström, and nearly at the same time by himself, about the end of last year.

He exhibited and described the mineral from Wanlockhead in which he found it, detailed the process for extracting it, enumerated its most interesting properties when in the metallic state, and the characters by which in all its states it may be distinguished from Chromium, the only other metal with which the analytical chemist is likely to confound it. He exhibited various compounds and salts of the metal, among which were some beautiful crystals of Vanadic Acid, which were transparent, of a brown colour by transmitted light, but reflecting a purplish tint. They were in the form of flat prisms of a high degree of lustre, and had been ascertained by Dr. Brewster to possess a refractive power approaching that of the diamond, to have at least one axis of double refraction, and to belong to the prismatic system of Mohs.

Mr. Witham read a Paper *on the general results of botanical investigation concerning the character of the Ancient Flora, which by its decomposition has furnished the materials of coal-seams.* He described the discoveries which the art of slicing and polishing the fossil stems of plants had enabled him to make, concerning the internal structure of these large coniferous trees which especially abound in the lower part of the Carboniferous Series of Berwickshire; and stated that Geologists are now agreed that the plants of these ancient periods are of more diversified and complicated types than a distinguished foreign writer supposed.

The following *Notice of a fact observed in the torrefaction of Yellow Copper Pyrites* at Amlwch, in Anglesey, by Dr. Henry, was read by the Secretary.

'When on a visit, a few years ago, to the Copper-Mines and Works at Amlwch in Anglesey, a fact was mentioned to me by an intelligent superintendent of the processes carried on there, (Mr. Joseph Jones) which struck me to be interesting and curious. The poorer part of the ore (a native mixture of yellow copper pyrites with so much foreign matter as to contain only about 5 per cent. of copper) is roasted in kilns on the spot, in order to expel a considerable part of the sulphur. The combustion, after the kiln has been once lighted, is supported by the inflammable matter of the ore itself, and a smouldering heat, never, I was assured, sufficient to occasion fusion, is kept up for several months. On examining the lumps of roasted ore, small nodules are observed of an iron grey colour, with some lustre, resembling in appearance the vitreous copper ore (cuivre sulfuré of Haüy). These nodules have been found, when assayed, to be very much richer in copper than the original ore. Their specific gravity I found to be 4.6, very nearly that of vitreous copper ore. By a few general experiments, I ascertained that they are not entirely soluble in heated nitric acid, and that the solution contains a small proportion of peroxide of iron, with a much larger one of oxide of copper. The yellow copper pyrites, in its natural state, was determined by Mr. Richard Phillips, to consist of

2 atoms of protosulphuret of iron,
1 atom of bisulphuret of copper.

'It should appear, therefore, that during torrefaction the bisulphuret of copper, by parting with one atom of sulphur, is converted into protosulphuret, which, by its aggregative attraction, is collected into small nodules. This fact furnishes an additional example, to the few which were before known, of changes of molecular arrangement in bodies heated below their point of fusion; with this further circumstance, that the attraction, which causes the aggregation of the particles, is sufficient to overcome the obstacle of interposed matter of a different kind. The only other instances of similar facts that at present occur to me, are presented by *crystallites*, and by the products of Mr. Gregory Watt's experiments on Basalt, some of the appearances of which he supposes to have taken place after the fused mass had returned to a solid state.

'In the second volume of Breislac's *Institutions Geologiques*, I was pleased to observe, two or three years after the foregoing fact had occurred to me, that a precisely similar observation had been made by Brocchi on the roasted copper ore of Agardo, which is also the yellow pyrites, and of quality, as to its proportion of copper, not exceeding that of the Parys Mountain. On breaking the lumps of roasted ore, similar nodules were observed; and these, when assayed, were found to contain two-thirds of their weight of copper, while the surrounding ore had lost greatly of its original proportion of that metal. In the central parts of some of those nodules, small fibres and plates of metallic copper were visible, an appearance which I have not observed in the roasted ore of Anglesey. The nodules, thus enriched in their proportion of metal, are picked out, and subjected to reducing processes.

M. Breislac adds, that the torrefaction of the ore, at Agardo, is carried on with the careful avoidance of such a heat as would occasion the fusion of the ore; for this is ascertained to be very injurious to the subsequent operation.'

It was remarked by Mr. Johnston, that a similar observation had been made some years ago by Professor Brodberg, of the school of Mines at Fahlun, and was detailed by him in a Paper published in the Swedish Transactions, and reprinted in the Edinburgh Journal of Science.

THURSDAY EVENING.

On Thursday Evening Mr. Scoresby gave "*An exposition of some of the laws and phenomena of Magnetic Induction, and of the mutual influences of magnets on each other*, with an account of *a method of application of the magnetic influences for the determination of the thickness of solid substances not otherwise measurable.*"—In the introductory observations, Mr. Scoresby considered the general nature, as far as it is understood, of the magnetic principle, and described a magnetic bar as a battery of magnetic particles, the arrangement of which being regular and consistent, transmits to the poles, like the galvanic pile, the general aggregate of their individual energies. He defined *induced magnetism*, "as the development of the latent magnetism in iron or steel by the juxta position of any substance in a magnetic condition." His investigations on the law of induced magnetism extended to the different qualities of iron and steel; to the proportion of influence acquired by similar masses at different distances from the proximate magnet; and to the relation of capacity in masses in all other respects similar except as to thickness. The proportion of influence was shown, at different distances, of the magnetism induced upon the nearer and more remote ends of a bar of soft iron, and the quantity transmitted, compared with the portion directly induced, was numerically stated. A bar of very soft iron, placed directly over a magnet of similar dimensions, was found at the distance of 5 inches, to acquire $\frac{1}{30}$th of the power of the magnet. At 4 inches above, the inductive influence of the magnet was $\frac{1}{19}$th of its own power; at 3 inches, $\frac{1}{15}$th; at 2 inches, $\frac{1}{7}$th; at 1 inch, $\frac{1}{4}$th. At $\frac{1}{4}$ of an inch above, the power induced was equal to $\frac{1}{2}$ that of the magnet, and at the distance of $\frac{1}{16}$th, it amounted to $\frac{2}{3}$ds. Several new and curious illustrations of the phenomena of induced magnetism were then exhibited to the Meeting.

FRIDAY MORNING.

Mr. Scoresby concluded his account of his Magnetical experiments. He described the *action of magnets of different dimensions on the needle of the compass*, and the investigation of the law of the deviation at different distances, and with magnets of various sizes. With a beautiful pair of three feet bar magnets, he was able to produce a very perceptible action on the compass, through a variety of intervening solid substances, at a distance of more than 61 feet; and to measure with tolerable precision various masses of solid rock of from 3 feet to more than 40 feet in thickness by the magnetic deviations. The phenomena now communicated to the Association, with their different important applications, were the results of original investigations and discoveries, accomplished, for the most part, within the last ten months.

A Paper by Dr. Brewster *on the structure of the crystalline lens in fishes, birds, reptiles, and quadrupeds*, was read by the Secretary, and illustrated with drawings and models by the Author. After giving an account of the previous observations of Leeuwenhoek and others, the Author explained the method in which he conducted his enquiries. The lenses of almost all animals are composed of distinct fibres, and when any of the laminæ are removed, the surface appears fibrous or grooved. In large lenses, the direction of these lines may be easily traced by the microscope alone, but in many cases this is quite impracticable. In order to get rid of this difficulty, the author observed the image of a candle or bright luminous object, when reflected from a fresh surface of the lens, and he found this colourless image invariably accompanied by coloured images on each side, as in mother of pearl, and in Mr. Barton's *Iris* ornaments. As the direction of the fibres is necessarily perpendicular to the line joining these coloured images, and as the distance of the coloured images varies inversely with the diameters of the fibres, Dr. Brewster was able to trace these fibres to their points of convergency or terminations, even when the fibres themselves were no longer visible. When the crystalline lens is dried, a furrowed impression of its surface may be taken upon wax, and the impression will, like that from mother of pearl, exhibit the same coloured images.

By the process now described, Dr. Brewster has examined many hundreds of the lenses of animals brought from all parts of the world, and has found that there are five different modes in which the fibres are arranged, the same mode being invariably found in the same animal. These different arrangements of the fibres were illustrated by elegant drawings from the pencil of Dr. Greville, and by wooden models, which exhibited all the inflexions of the fibres and the dimensions of their diameter as they approached to their termination.

In the greater number of lenses the structure is perfectly symmetrical in relation to the anterior and posterior surfaces, or to the poles of the axis of vision: but Dr. Brewster discovered in some lenses a remarkable deviation from this symmetry ; the anterior surface having the fibres arranged according to one law, and the posterior surface according to another. The object of this singular structure he conceived to be to obtain a more perfect correction of the spherical aberration of the eye to which it belongs.

Mr. Murchison, President of the Geological Society, communicated, verbally, observations "*on certain accumulations of clay, gravel, marl, and sand around Preston in Lancashire, which contain marine shells of existing species.*"

The marine shells of existing species in this district were first noticed by Mr. Gilbertson of Preston ; and Mr. Murchison was desirous of calling the attention of the Meeting to the merits of that able naturalist.

He had this year visited the localities and found the deposit in question to consist, near the surface, of clay with boulders of distant rocks, covering great thicknesses of marl, gravel, and sand, the sand usually being the lowest. These accumulations are not only spread over the broad delta extending from the coast at Blackpool to Preston in the interior, but they rise at the latter place into considerable eminences extending in plateaux on the banks of the Ribble and the Darwent, for several miles inland.

In certain places the marls, sands, and gravels contain shells of existing species, (Mr. Gilbertson enumerates about 20 species) not differing from those of the adjoining sea, above which they were found at various heights from 80 to 300 feet. The accumulations seldom offer proofs of regular bedding or tranquil deposit, but rather resemble the detritus formed upon an agitated shore; although from their diversity of structure they present distinct evidence of having been heaped up during a long protracted period. Seeing the height above the sea at which these shells are found, and that they are usually buried under a cover of clay, containing large boulders of Cumbrian rocks, Mr. Murchison infers that one of the last elevations of the central ridge of the North of England is thereby proved to have taken place after the creation of existing species of animals.

The deposit was described as resting on inclined and contorted strata of millstone grit, and shale, and an overlying red sandstone, (banks of the Ribble and Darwent,) and upon the edges of the productive coal measures near Chorley.

This communication was followed by a discussion, in which Mr. Greenough, Mr. Murchison, and Mr. Phillips took part, on the application of these observations to resolve the question of the change of level on the coast of Lancashire, and on that of Yorkshire, where gravel deposits containing marine shells of existing species have been described by Mr. Phillips as diluvium.

Dr. Daubeny gave a Lecture *on the connexion of Hot Springs with Volcanos.*

Hot Springs, he observed, are met with for the most part in one of these situations. 1st. in the vicinity of Volcanos. Of this kind of position, the active volcanos of Iceland, Italy, and Sicily, and the extinct ones of France, Hungary, and the Rhenish provinces, afford numerous examples. In these cases, it cannot be doubted but that the heat of the springs is derived from the volcanos contiguous to them.

2nd. At the foot of chains of mountains which have been uplifted. Now as the elevation of such chains may with some probability be referred to a volcanic cause, it seems most natural to attribute the occurrence of their hot springs to the same, and this is confirmed by observing that they are found for the most part either near the line at which the elevation seems to have commenced, or else near the axis of the chain, in places where the valleys penetrate to the greatest depth. Of both these positions, the Pyrenees afford abundant examples.

3rd. Hot springs occur in some cases at a distance from any great chain of mountains, but then there is in these cases often strong evidence of some fracture or dislocation of the strata, such as may reasonably be attributed to a volcanic cause. Instances of this are supplied by the hot springs of Clifton in this country, Carlsbad in Bohemia, and Pfeffers in Switzerland.

It appears, then, that the great majority of hot springs are attributable to volcanic action, and this is confirmed by considering the gaseous products which they evolve, for these are the *same* as those given off by volcanos.

The first of these is sulphuretted hydrogen, which is common also to volcanos, especially when in a state of languid action.

Another kind of gas given off by many hot springs, is carbonic acid, which abounds also in cold springs, but when this is the case, the latter often exist in *valleys of elevation,* to use Dr. Buckland's nomenclature, which in the structure of the beds surrounding them, bear evidence of sudden uplifting. Such are the springs of Pyrmont in Westphalia, and of Tunbridge in this country.

The third gas given off by hot springs, is nitrogen. It had been previously found at Bath and Buxton, but Dr. Daubeny has likewise detected it in several other tepid springs in Derbyshire, and in that of Taafe's well near Cardiff in Glamorganshire. He met with it also in a state of purity in the hot springs of St. Gervais, Cormayeur, St. Didier, and others, on the skirts of the Alps, and accompanying carbonic acid in those of Mont Dor, St. Nectaire, and Chaudes Aigues in France; and from these observations of his own, combined with those of others, he concluded that nitrous gas is disengaged from the generality of hot springs.

The presence of nitrogen is also an argument for adopting that *chemical* theory of volcanic action, which supposes it to arise from a species of combustion or oxidation, in preference to the *mechanical* hypothesis which regards it merely as a consequence of the law of distribution of temperature within the earth, and excludes the idea of chemical agency altogether.

On the latter part of this paper, it was remarked, that the gases mentioned by Dr. Daubeny are evolved from decompositions known to be going on at the surface, and at various depths from the surface of the earth, independently of hypothetical causes.

With respect to the occurrence of remarkable dislocations in connexion with mineral springs, Mr. Smith observed, that in the neighbourhood of the Bath waters, the dislocations must have been occasioned in very ancient geological æras, since the strata of the lias series, through which the hot springs rise, are unaffected by the disturbances of the coal and limestone series beneath.

FRIDAY EVENING.

Mr. Potter communicated the following *observations on Electrical Phenomena, exhibited in the Torricellian vacuum.*

Though early experimenters had directed their attention to the phenomena of Electricity shewn in passing through space as void of matter as they were able to procure, yet the question whether electricity can pervade a perfect vacuum, or cannot do so, is still far from being decided. The experiments with the air pump would lead us to conclude that electricity would pervade an actual vacuum without sensible resistance, and without exhibiting light. But Mr. Walsh, Mr. Morgan, and other experimenters, had asserted that electricity could not pervade a perfect Torricellian vacuum. Sir Humphry Davy has maintained that the Torricellian vacuum is permeable to electricity, with an exhibition of more or less light according to the temperature. But as the appearances he describes are similar to those given by Mr. Morgan, when a very minute portion of air remained in his tube, it must be considered a question still open to further investigation.

From the writer's experiments, made with the object of learning something which might throw a light on the nature of Aurora Borealis, it has appeared, in conformity with the previous experiments of Sir Humphry Davy, Mr. Morgan, and others, that the passage of electricity through space containing only a very minute portion of air, was attended with a very considerable display of light, and this when the mercury in the tube stood scarcely perceptibly lower than that in a good barometer.

Dr. Warwick exhibited the method of making a powerful temporary Magnet, by coiling round a horse shoe of soft iron a quantity of copper wire, connecting the poles of a galvanic battery, as originally performed by Professor Moll of Utrecht.

Dr. Daubeny exhibited a new instrument composed of finely reticulated wire, intended to illustrate the effects of capillary attraction.

A description of the New Volcanic Island, by Mr. Osborn, communicated by Captain Hotham, R. N. was read to the Meeting.

SATURDAY MORNING.

Mr. Dalton, President of the Manchester Society, read his *Physiological Investigations arising from a consideration of the mechanical effects of atmospheric pressure on the animal frame.*

In this essay Mr. Dalton endeavours to answer the question, how the animal body is enabled to resist the pressure of the external atmosphere, which varies in amount from 15 to 20 tons on a middle sized man, without being sensible of the whole or any part of this enormous and fluctuating pressure.

The average specific gravity of the human body being taken according to Robertson's experiments at 0.9, Mr. Dalton observes that the mean specific gravity of all the solids and fluids which are in it is about 1.05. The air contained in the lungs and other receptacles of the body is estimated at 150 cubic inches; the average bulk of the body 4,500 cubic inches, of which consequently 4,350 cubic inches, are solid and liquid parts. The mean specific gravity of these parts, taken separately when dead, being 1.05, their total weight should be equal to 4,567 cubic inches of water, but it was found by actual weighing, when alive, equal to 4,044 cubic inches, a difference of weight equal to 523 cubic inches of water, or more than $\frac{1}{9}$ of the whole weight of the body. The general conclusion deduced by Mr. Dalton from these data, combined with other considerations, is that the whole substance of the body is pervious to air, and that a considerable portion of air constantly exists in the body during life, subject to increase and diminution according to the pressure of the atmosphere, in the same manner as it exists in water: and further, that when life is extinct, this air in some degree escapes and renders the parts specifically heavier than when the vital functions were in a state of activity. *(This Paper will be printed in the Manchester Memoirs, Vol. V.)*

Mr. Allan communicated a *Notice of a magnificent specimen of aqua marine in the possession of Don Pedro.*

The largest mass of *precious* beryl known to mineralogists is an aqua-marine belonging to Don Pedro; it is nearly as large as the head of a calf, its extreme length being 9⅛ inches, its breadth 6⅝ inches; it weighs 225 ounces Troy, or eighteen pounds nine ounces. On one side there are slight indications of the plane of a crystal; but it is otherwise entirely water worn. Its surface is consequently dull; but beneath it the mass is perfectly clear and transparent, and, large as it is, without a flaw. It is of a beautiful pale bottle-green colour.

Mr. Robison, Secretary of the Royal Society, Edinburgh, described and illustrated by diagrams the principles and mode of construction of *his Linseed Oil Barometer*, and detailed the mechanical processes by means of which he had been enabled entirely to free the oil from atmospheric air and other gaseous admixtures.

Mr. Forbes read to the Meeting his *Essay on the Horary Oscillations of the Barometer near Edinburgh.*

In the former part of this communication, the Author, after a short view of the progress of his researches on this subject, states the circumstances under which his observations commenced. The place of observation is 4 miles S. W. of Edinburgh, lat. 55° 55′ 20″ N. long. 12′ 57.5″ west of Greenwich, at an elevation of 410.5 feet above the mean level of the sea. Five observations were made daily of the barometer and attached thermometer, from 8 to 8½ a. m., at 10 a. m., about 4 p. m., and at 8 and 10 p. m., in order to detect the morning and evening maximum and afternoon minimum. The number of observations was 4410, which, being reduced to a standard hour, (10 p. m.) by methods described at length in the paper, yielded the following results.

The maximum of oscillation occurred in spring and summer at 8 or 8½ a. m., and 10 p. m., in autumn and winter at 10 a. m. and 8 p. m.

Taking these hours, and selecting the actual maxima, the amounts of Oscillation are found to be

	Morning.	Evening.
In Spring	.0213	.0202
Summer	.0181	.0151
Autumn	.0136	.0079
Winter	.0031	.0031

After comparing the results of his observations with an extensive collection of those of other observers in various latitudes, Mr. Forbes proceeded to investigate formulæ which should express with the least error the general amount of oscillations in different latitudes, at the level of the sea. For this the paper itself, which will appear in the Transactions of the Royal Society of Edinburgh, must be consulted, as also for various indications of the influence which elevation above the sea, the season of the year, and the absolute mean temperature of the place, have in modifying the amount and period of occurrence of the phenomenon.

THE FOLLOWING EXTRACT of a letter from Sir James South to Dr. Brewster, dated Observatory, Kensington, Sept. 29, 1831, was read by the Secretary.

"Should the York Meeting not have terminated its labours, and should you think it worth the trouble, I wish you would call the attention of any astronomers that may be there, to the anomaly which sometimes attends the transits of the satellites of Jupiter, over the planet's face. Generally speaking, the satellite may be seen to glide on the face as a bright planetary disc, and remains so till it has proceeded one-sixth or one-eighth of the planet's diameter. It then becomes invisible till it approaches the opposite limb within one-sixth or one-eighth of the diameter of the planet, when it may be again detected as a bright disc, and remains so till it passes entirely off the face of the planet.

This anomaly I have witnessed three or, I believe, four times, and the last on Saturday fortnight, when the satellite itself instead of being invisible, except near the limbs, was perfectly visible as a black disc, and, with its attendant shadow, was distinctly seen with the five feet equatorial. The point to be settled is,—why should this fact be presented sometimes and not always?

The approaching disappearance of Saturn's Ring, and even its present intersection, will be very advantageous for obtaining a knowledge of the various phenomena of the Satellites, and of the actual figure of the planet. Of the former, we know next to nothing; of the latter but little that is satisfactory. Sir William Herschell's observations are entirely at variance with mine.

If Lord Oxmantown, or any person possessing a large Reflector, would turn it every fine night on the Georgium Sidus, it would be well; for although Sir William Herschel expressed to me orally his doubts as to the accuracy of his observations, which assigned to that planet two rings perpendicular to each other, still I know not if this suspicion of his has even been promulgated. One Satellite has certainly been seen with my Achromatic, and one also by myself and Struve with the twenty feet Reflector. Laplace doubted the existence of more than two. If the others are not greatly more faint than the one I have seen, Lord Oxmantown will certainly detect them instantly with the immense quantity of light afforded by his Reflector."

SATURDAY EVENING.

Dr. Daubeny read an account of *Experiments on the combustion of Coal Gas* performed at York, by the Rev. W. Taylor, from which it appeared that by regulating the quantity and mode of admission of the atmospheric air to the flame of a common argand gas burner, the *quantity* of light might be much increased without increased expenditure of gas, while the *colour* of the light so produced varied according to circumstances. He referred the effects to the principle laid down by Sir H. Davy as to the luminosity of flame depending on the amount of solid matter maintained in a state of ignition at any given time.

The Rev. Wm. Vernon Harcourt shewed *a Lamp constructed upon a new principle,* and explained the principle and construction of it. He gave it the name of an *oil gas lamp;* not because it was lighted by gas formed at a temperature below that of flame, for this was common to all lamps, but because, as in the gas lights of the streets, the gas issued from a *reservoir,* and owed the perfection of its combustion not to an ascending current of hot air, but to the force with which it was propelled from the reservoir and carried the air along with it. It differed, however, from the common gas lights in these circumstances,—that the reservoir formed part of the burner; that the gas was formed as it was consumed; and that it was propelled, not by a *vis a tergo* and in a state of condensation, but by the expansive force of its own heat. In consequence of this circumstance the current of the gaseous jet was more rapid in proportion to the quantity of matter contained in it than in the common gas lights, whilst it was also at a much higher temperature, so that it could issue with a greater velocity without being liable to blow itself out. The practical difficulty of the construction consisted in the obtaining a steady supply of oil, especially with the cheap oils. This difficulty had been in great measure surmounted, but the instrument was still imperfect, and had been charged by some accident that evening with a vegetable oil from which a clear light could not be obtained.

An Essay by Dr. Brewster *on a new Analysis of Solar Light* was read by Mr. Phillips.

According to Sir Isaac Newton's Analysis of Solar Light by the prism, *white light* consists of seven different colours, each of which has a peculiar range of refrangibility occupying distinct spaces in the prismatic spectrum, " to the same degree of refrangibility ever belonging the same colour, and to " the same colour ever belonging the same degree of refrangibility."

While examining the specific action of different coloured bodies in absorbing particular portions of the prismatic spectrum, Dr. Brewster was led to observe that rays of two different colours in the same spectrum had actually the very same degree of refrangibility, the one colour being superimposed upon the other. By extending this inquiry and availing himself of the aid of various methods of insulating rays which the prism could not separate, he was conducted to the new Analysis of Solar Light which it was the object of this paper to explain and establish. The following propositions contain a general view of the results.

1. White Light, whether it be that of the sun or of artificial flames, consists of *three* simple colours only, *Red, Yellow*, and *Blue*, by the union of which all other colours are composed.

2. The solar spectrum and that of artificial flames, whether formed by prisms of transparent solids and fluids, or by grooves in metallic and transparent bodies, or by the diffraction of light passing through a narrow aperture, consist of *three* spectra of equal length, beginning and terminating at the same points, (viz. a Red, a Yellow, and a Blue Spectrum) and having their *maximum* of illumination at different points of their length, and their *minimum* at their two extremities.

3. All the seven colours in the solar spectrum, as they were

observed by Newton and Fraunhofer, are compound colours, each of them consisting of Red, Yellow, and Blue Light in different proportions.

4. A certain portion of *White Light* incapable of being decomposed by the prism, in consequence of all its component rays having the same refrangibility, exists at every point of the spectrum, and may at some points be exhibited in an insulated state.

(Since this paper was read, an abridgement of it has been published in the Edinburgh Journal of Science, No. X. New Series, pp. 197—207; and the original Memoir, illustrated with coloured drawings will appear in the next Part of the Transactions of the Royal Society of Edinburgh, Vol. XII. Part I.)

Mr. Wm. Gray, jun. then read the Translation of a memoir by Professor Gazzari of Florence, *on a method of detecting the traces of writing which has been fraudulently erased.*

The Author of this paper having been frequently appointed by the Tribunals to give professional evidence in trials of this nature, instituted experiments on the subject, which, by shewing him the possibility of *removing entirely not only the ink, but also the materials employed in its removal,* proved that cases might arise, when the fraud could not be detected in any other manner than by examining *the condition of the paper or other material written on.* For this purpose optical means were tried in vain, and immersion in water did not shew such a difference in the absorptive power of the written and unwritten parts as happens in the employment of certain sympathetic inks; but on exposure of the suspected paper near to a moderate fire, the paper, which, in consequence of the corrosive effects of the ink, was in those parts altered in its nature, was unequally acted on by the process of carbonization, and thus the number and length of the lines, and often the whole of the erased portion was distinctly revealed.

EXHIBITIONS, &c.

Mr. Gould, Member of the Zoological Society of London, exhibited select specimens of Birds figured and described in his work on the Ornithology of the Himalya Mountains, and copies of this work were laid upon the tables for inspection.

Mr. R. Havell exhibited Drawings of Birds for Mr. Audubon's great work on American Ornithology.

Mr. Hey, Curator to the Philosophical Society of Leeds, shewed some remarkable specimens of Fishes from the Yorkshire coal district, which belong to the Museum of that Institution.

Mr. Williamson, Keeper of the Museum to the Philosophical Society of Scarborough, brought for examination a series of the reliquiæ of fossil Crustacea recently discovered in the strata of that coast.

Mr. Wm. Gilbertson, of Preston, displayed an instructive suite of Crinoidal remains with other remarkable fossils from the vicinity of Clithero, and marine shells belonging to existing species from the gravel deposit on the banks of the Ribble.

Copies of recent publications lay upon the tables from Dr. Boswell Reid, from Mr. John V. Thompson of Cork, from Mr. Ashley of Edinburgh, Mr. Harrison of Barton, and others.

Mr. Smith, Author of the Map of the Strata of England, shewed a Geological Map of the district round Hackness.

Mr. Murchison, President of the Geological Society, shewed coloured Maps representing the Transition Rocks, the old Red Sandstone, and Carboniferous Limestone, on the border of Wales; the basin of new Red Sandstone (as Mr. Murchison has determined it to be) in the Vale of Clwydd; and other Maps, Sections, and Notices relating to parts of South Wales, Lancashire, Durham, and Yorkshire.

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2

AN

INQUIRY

INTO THE PRESENT STATE OF
THE
MEDICAL PROFESSION IN ENGLAND,
CONTAINING
AN ABSTRACT OF ALL THE ACTS AND CHARTERS
GRANTED TO
PHYSICIANS, SURGEONS, AND APOTHECARIES,
AND
A Comparative View of the Profession
IN
SCOTLAND, IRELAND, AND ON THE CONTINENT
OF
EUROPE.
ALSO,
A COMPENDIOUS ACCOUNT OF ITS STATE AMONGST THE
Ancient Greeks and Romans:
TENDING TO ILLUSTRATE
The urgent Necessity of Legislative Interference,
AND THE
MERITS OF THE BILL
ABOUT TO BE PRESENTED TO PARLIAMENT
BY THE
APOTHECARIES AND SURGEON-APOTHECARIES
OF
ENGLAND AND WALES.

TROS TYRIUSQUE MIHI NULLO DISCRIMINE AGETUR.—VIRG.

BY ROBERT MASTERS KERRISON,

Member of the Royal College of Surgeons; of the Society of Apothecaries; Translator of Richerand's Physiology; and one of the Editors of the Surgeon-Apothecary's Journal and Review.

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INTRODUCTION.

To correct error, and to prevent interested misrepresentation from assuming the appearance, or maintaining the influence of truth, are duties, which every man owes to society, and these duties become more imperatively urgent, when a question of importance is agitated; when the utility, or futility of a measure involving the interests of a very numerous and respectable body of men, and Health, the most valued possession of every individual, are the subjects of discussion.

The Apothecaries, Surgeon-Apothecaries, and educated Practitioners of Midwifery, in England and Wales, had long seen with regret, and felt with inconvenience, the effects of various encroachments upon their occupations, diminishing the fair reward of their industry, and tending to the degradation of their useful professions. In the summer of

1812, several General Meetings of them were convened in London by public advertisement, and they were unanimous in the opinion, that a necessity existed for legislative interference. It was not the conflux of a few discontented men, without practice, or public estimation, but the assemblage of nearly all the reputable practitioners in London, and many from distant counties. A Committee was appointed, for a full and deliberate investigation of the subject, and the names of Burrows, Simons, Chilver, Walker, Tegart, Upton, Pennington, Jones, Atkinson, Gardner, and of others, equally respectable, were so many pledges, both of the existence of real causes of complaint, and of the propriety of making an appeal to the justice of Parliament for redress. They had communication, personally, and by letter, with gentlemen from distant parts of the country, and meetings were held by the qualified Practitioners in almost every county of England and Wales, who appointed local Committees, to correspond with that in London, where every proposition was discussed and arranged, so as, in their opinion, to improve and to secure the respectability of the Profession, and to protect the public from the mischievous, or fatal effects, daily arising from the presumption of ignorant and unqualified pretenders, by the institution of a tribunal (not now in existence) by which every future student should be examined in those departments of the profession, which regard the duties of the prescribing Apothecary and Accoucheur, before they are permitted to assume the important office of regulating, or restoring health.

The Committee felt the delicacy of their situation, and foresaw the difficulty of their task, they endeavoured, by every possible means, to perform it fairly and honourably, without trespassing on the privileges of the chartered medical bodies. The objects of association were, therefore, explained in letters to the Royal College of Physicians, the Royal College of Surgeons, and the Society of Apothecaries; their views and intentions, unequivocally stated, and the advice and concurrence of these bodies respectfully solicited. It would exceed the limits of this Book, to relate the correspondence :* it may be sufficient to observe, that the Committee saw with regret, that they were treated with a coldness, bordering on contempt, and they were afterwards opposed in Parliament, and *previously* to the introduction of their Bill, by letters written to individual Members, requesting their opposition to the measure, when in the House, without assigning any reason, but resting merely upon their own assertions, that the Bill *ought to be opposed.* This proceeding might have been reasonable, two or three centuries ago, when all the medical learning of the country rested in the members of the College: but, it is neither referable to the Apothecaries and Surgeon-Apothecaries of the present day, nor, at all, consistent with those sentiments which should, ever, be conspicuous in the dignified members of a learned Profession, and it will be seen, in the sequel, whether such opposition and conduct have not been both illiberal and unjust.

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* See a Letter to Sir Francis Milman, Bart. President of the Royal College of Physicians in London, on the Subject of the proposed Improvement in the Condition of the Apothecary and Surgeon-Apothecary, by one of the Committee; printed for Callow, Crown-Court, Soho. It is an argumentative pamphlet, containing the whole Correspondence in an Appendix.

The Author takes a general review of the Professions of Medicine and Surgery from their earliest period, of their state in England at the enactment of the first law, and of the subsequent modifications and increase of power, granted to them by charter and various Acts of Parliament, which he has attentively perused, and given a correct abstract of their principal contents; he then proceeds to explain the causes, which rendered an extension of medical practice absolutely necessary, to point out the means which have long existed in the Metropolis of obtaining information in every department of medical learning, to exemplify the very general diffusion of professional knowledge, and to prove, that the relative situations of the Physician and Apothecary are, no longer, the same as they were at the time of the enactment of those laws, *which are still suffered to regulate the medical sciences,* and, that this difference, with the prevalence of uncorrected abuses, and other causes, operating to the prejudice of the general Practitioner, as Apothecary, Surgeon-Apothecary, and Accoucheur, both by the degradation of their useful occupation and injury of the public, constitute a sufficient reason for the intended appeal to Parliament. He, afterwards, gives an account of the proceedings of the ruling members in the chartered medical establishments, animadverts on the apparent injustice of their conduct, and concludes by giving a copy of the Resolutions of the Committee as the intended bases of the Bill, and, by recommending a general concurrence for the attainment of its objects.

The Author adopted a motto of impartiality, and he has been influenced throughout this little Volume by no other sensations than those of respectful independence, equally remote from the opposition of arrogance and the acquiescence of timidity, remembering the expressions of his favourite, Horace, when taking a comprehensive view of the faults and follies of mankind:

> " Ac ne, fortè, roges, quo me duce, quo lare tuter:
> " Nullius addictus jurare in verba magistri,
> " Quo me cunque rapit tempestas, deferor Hospes."

This sentiment was avowed by Dr. Johnson, in his admirable work, the RAMBLER, which will ever be perused with pleasure and improvement. It is a feeling, which should never be absent from the minds of those, who act from the impulse of conscientious rectitude: for, it will impart energy to their style, effect to their diction, and, ultimately, compel the enemies of truth to yield the palm of victory to meritorious exertion.

To those Noblemen and Gentlemen to whom the opportunity of fifteen years' practice at the West end of the metropolis may have made the Author personally known, he presumes, that it will be unnecessary to declare, he has no wish but such as proceed from motives of solicitude for the general respectability of his Profession: to others, he trusts, that the facts stated will be deemed a sufficient apology for the trouble incurred in reading these few pages: and to all, he gives the best proof of his opinion of the justice of the Cause he has embraced, and of the sincerity of his endeavours to promote it, by, spontaneously, publishing the Book at his own expense, and presenting a Copy of it to every Member of both branches of the Legislature: for, he is persuaded, that there is too much individual liberality of sentiment and honourable feeling, and too much justice in a British Parliament, when in possession of the whole subject, to suffer its decision to be biassed by a partial view of any question whatever; and, although Gentlemen are often supposed to arrange their opinions in concert, upon certain great measures in foreign, or domestic, politics, from their sense of the tendency of these measures to the prosperity, or adversity of the kingdom, the Author is convinced, that, in a question so remote from political controversy, so nearly interesting the welfare of themselves, their families, and the community, no one can be found, who will lend himself to the maintenance of the partial interests of any body of men, when they operate to the prejudice of others, equally deserving his protection; but, that every Legislator will exercise his own understanding upon a full and impartial consideration of the question, in all its bearings, and decide according to the dictates of his judgment.

New Burlington-Street,
November 11*th*, 1813.

AN

INQUIRY,

&c. &c.

CHAPTER I.

ON THE MEDICAL PROFESSION. ITS ORIGIN, PROGRESS AND ESTIMATION BY THE GREEKS AND ROMANS.

IN a state of rude nature, Man, the most perfectly organized of all animated beings, had little occasion for Medicine; but, in proportion to the increase of the human species, their association into tribes, the building of cities, the progress of civilization, and their consequences on the physical and moral state of his existence, by the creation of artificial wants, the luxurious indulgence of his appetites, and the habits of indolence, an attention to the means of regulating and preserving Health became an object of importance—of necessity. It is obvious, therefore, that a knowledge of the operative effects of a few herbs and roots constituted the first period of Medicine, that this knowledge became gradually enlarged by the chances of coincidence, and by reiterated observation, and was at last embodied into an assemblage of facts, which required attention and discernment to apply with success, in every disturbed state of human existence, called disease. It cannot be doubted, indeed, that a science so useful in preserving life, and so desirable in rendering its tenure more tolerable under the pressure of multiplied and protracted infirmities, must soon have been held in high estimation, and its aid sought after with avidity.

It is evident, that the Egyptians collected resinous Gums and Drugs, now used in Medicine, for the preservation of their dead in mummies; it is probable, therefore, that they employed them medicinally: but there is too much fabulous obscurity in the accounts of this period to admit of correct definitions, nor does it enter into the plan of this little volume to give a detailed history of Medicine, but merely such an outline as may serve to elucidate its state amongst the most polished nations of antiquity.

In the early period of Grecian prosperity, Medicine was studied by the Philosophers, *as a part of general science;* it was understood by Pythagoras, Empedocles, and Democritus. Celsus observes "*Primòque medendi scientia sapientiæ pars habe-*" *batur.*" Hippocrates is believed to have been the first who formed it into a distinct profession: the expression of Celsus is clear on this point: "*Hip-*" *pocrates Cous, primus quidem ex omnibus memoriâ*" *dignis ab studio sapientiæ disciplinam hanc se-*" *paravit, vir, et arte, et facundiâ insignis.*" See also Pliny, *Histor. Nat. Lib.* XXVI. *Cap.* 2.

It is unnecessary to follow the progression of Medicine, and *Surgery*, as an integral part of that science and art, practised by Hippocrates and the early physicians, through all its modifications at the different periods of the Grecian and Roman governments; it may be sufficient to know, that its necessity and utility have been acknowledged in all ages, and in every country of the civilized world, that, in the progress of literature and the liberal arts, the professors of medicine were encouraged, esteemed, and rewarded with the highest honours, which can be proved by the existence of antique coins, busts, and medals, and the recorded sentiments of ancient authors.* The deification of Æsculapius—temples built in Greece and Italy for the worship of this deity—*Tabellæ votivæ*, one of which was found on an island in the Tiber, and preserved in the Palace Maffæi, at Rome—Sacrifices to Hygæia, the Goddess of Health. About the time of Herophilus and Erasistratus (570 years before the Christian Æra) the profession was divided into three branches, professed by distinct persons: Those who studied the effects of diet only; those who administered medicines; and those employed in manual operations. The dietetic physicians were in highest repute, regulated their art by particular principles, called by Celsus "*Disciplina rationalis*," and were distinguished, on this account, by the name Μεθοδικοι: but, even those who attended to diet alone, were subdivided into another sect, who, disregarding all theory, placed their whole reliance on experience, drawn from attentive observation of effects: they were called Εμπειρικοι. The names and particular tenets of some of these physicians are handed down to us by Celsus, Pliny, and many ancient authors; but a medical writer of the last century has enumerated them with minute correctness.*

---

* *Neque verò Asclepiades, is quo nos medico, amicoque usi sumus, &c.* Cicero de Oratore, Lib. I.

The Romans, a nation of warriors for many centuries after the building of their City, were late in adopting the use of the liberal arts and the study of Medicine. It was not until after the conquest of Greece, that the professors of these sciences were encouraged at Rome; and the early superiority of the Greeks in these things was evident, because all the teachers were from that nation, or were Romans who had studied under them: even so late as the time of Cicero, it was the custom of the Roman nobility to send their sons to Athens, as to an University, to finish their education in literature. The institutions of Medicine, therefore, which obtained in Italy, were strictly Grecian: also the various Sects of Physicians, the Surgeon and the preparer of Medicines, and it should seem, that a subdivision existed amongst those who were employed about drugs. Φαρμακευτης was the name given to the preparer of Medicines; Φαρμακοπωλης to him who sold them, which exactly corresponds with the English word Drug-seller, or Druggist. It is evident also, that, in the time of Celsus and Galen, the prescriber of medicines was often responsible for their preparation. Galen, who lived at Rome in the second century of the Christian Æra, and was physician to the Emperor Marcus Aurelius, mentions one Cassius, a physician of celebrity in that city, who kept a slave for such purpose.

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* See *Histoire de la Medicine*, by Le Clerc, a correct and elaborate work in a thick quarto volume, published early in the last century, which may be safely consulted by those who desire information upon every thing relative to the medical, surgical, and dietetic practice of the ancient Physicians; it contains a chronological account of the science, and its principal professors in the Egyptian, Grecian, and Roman States, compiled from the most authentic documents, and is, altogether, a book of great merit.

A storehouse, whether for grain or other commodities, was called in Greek Αποθηκη. The word *Apotheca* was used in this sense by Horace, Sat. 6. Lib. II.; Pliny also uses *Apotheca* to signify a vat, or reservoir for wine; by an extended acceptation, however, the repositories for herbs, drugs, and their compositions, were more definitively named Αποθηκαι; hence was derived the Latin word *Apothecarius*, in French *Apothécaire*, in English *Apothecary*; and the same radical word is employed in other modern languages to designate the person who collects, prepares, and compounds all those things which are used in the cure of diseases.

After the fall of the Roman Empire, the study of Medicine was nearly discontinued for many centuries; it was partially cultivated by the Arabians, from the fragments of Grecian and Roman writers which escaped the indiscriminate ruin of all literary and scientific establishments: in after ages, medical knowledge was possessed by the clergy, and practised by them in a limited and defective manner; and it was ultimately restored to full vigour in those regions, where the liberal arts began to revive: first in Italy, afterwards in France and other countries of Europe. Medical Schools were established at Salernum, Padua, Bologna, Montpellier, Paris, Leyden, Edinburgh, and last, although not least, whether estimated by the celebrity of its teachers, or the opportunities of scientific research, in LONDON.

There is so close a connection between all the branches of medical science, that, whatever artificial distinctions may have been made by the ancients, and imitated by the moderns, or suggested as convenient in large cities, Medicine and Surgery must have been always, and are now understood by one and the same person. The man of scholastic learning in an University, who is designed for a Physician, *must* afterwards attend lectures on Anatomy, he *must* dissect, to examine the structure of that most admirably arranged machine, the human body, and investigate the means, by which its various functions are performed (Physiology) or he will be ill qualified to regulate them, when interrupted by disease:* he *must* attend the practice of an Hospital, to see patients in every state of simple and complicated malady, and to witness the effects of those agents, or medicines, which are best adapted to remove them; and if, *from prospective advantages, or other motives of preference*, by making a selection of the particular department of prescribing *for internal disorders only*, he is called a PHYSICIAN, he is nevertheless acquainted with the general principles of Surgery, and is only deficient in that manual dexterity, which a little practice would supply, and which has always been considered the more mechanical, although not least useful, part of the medical profession. These remarks are alike applicable to the highest medical characters of antiquity, and to the Physicians, or educated practitioners, of the present time, in England, Scotland, and Ireland, whether Fellows, who obtained their *literary* education within the walls of a College, or Licentiates and others, who have become, perhaps, equally versed in that necessary and preliminary knowledge from other sources of instruction. Hippocrates united Medicine, Surgery, and Midwifery, in his own practice, and wrote on all these subjects. Celsus, a Surgeon, who also wrote on the practice of physic at the most flourishing period of the Roman Empire, bears testimony to the intimate connection between all the departments of the medical art, in these words: "*Illud ante omnia scire convenit, quod omnes medi-*"*cinæ partes ita innexæ sunt, ut ex toto separari non*

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* ——*eum verò recte curaturum, quem prima origo causæ non fefellerit.* Cels. Lib. I.

" *possint; sed ab eo nomen trahant, à quo plurimum* " *petunt.*" Lib. V. *præfat.*[*]

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[*] There is a passage in Cicero, recommending the attainment of general knowledge, and noticing the artificial subdivisions of the medical art at Rome, into Physicians, Surgeons, and Oculists: " *An* " *tu existimas cùm esset Hippocrates ille Cous, fuisse tum alios* " *medicos, qui morbis, alios, qui vulneribus, alios, qui oculis mede-* " *rentur?*" De Oratore, Lib. III.

CHAPTER II.

ON THE MEDICAL PROFESSION IN ENGLAND AT THE BEGINNING OF THE 16TH CENTURY, AND THE VARIOUS ACTS OF PARLIAMENT, OR CHARTERS, CONCERNING IT.

THE approach towards perfection is gradual. The dawn of learning had scarcely appeared in England, when those men, who devoted their lives to the medical profession, first by the attainment of classical learning at the University of Oxford, or of Cambridge, *where only it could then be fully obtained*, and *afterwards* by the study of Medicine at Padua, or other foreign Medical Schools, *where only it was then publicly taught*, were induced, on returning to their own country, to solicit an honourable distinction. It will be found, therefore, that in the third year of the reign of Henry VIII. (1511) an Act was made to prevent illiterate or unqualified persons from practising as Physicians and Surgeons. The Bishop of London, or, in his place, the Dean of St. Paul's, was invested with a power to call four Doctors of Physic, and for Surgery, "other expert persons of that faculty," to examine those, who wished to practise. The Bishop, or Dean, may be considered to have acted as President during the examination of the candidate by the Physicians and Surgeons, to have been an impartial judge of the fairness of the scrutiny, and to have decided the question of fitness or unfitness to practise the profession of medicine and surgery. Their jurisdiction was in London, and within seven miles.*

This was soon followed by another Act (1513) which merely exonerated *Surgeons* from the necessity of attending juries and serving in parochial offices, on account of the uncertainty of their calls and the urgency of their duties. Henry VIII. a Prince of energy in government, although much distracted by religious feuds and matrimonial controversies, was not unmindful of the liberal arts; he may be justly considered an early and steady protector of the medical profession; for in 1522, he enacted another law to increase the privileges and authority of the Physicans of London, by erecting them into a corporate body, with a President, Fellowship, and eight Elects. The President and three Elects were deputed to examine candidates, and grant or refuse them permission to practise.

In the year 1540 (32d of Henry VIII.) there was a new Act in favour of *Physicians* and their privileges: by this they were exonerated from the necessity of attendance on juries and parochial offices: they were empowered to search "apothecary wares," and to destroy such as were found of bad quality: four *Censors* were to be annually appointed for that purpose. The Physicians were authorized by this Act to practise Surgery by the following words: "And forasmuch as the science "of Physic doth comprehend, include, and contain "the knowledge of Surgery, as a special member "and part of the same."

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* This may be considered the first Act of Parliament for the establishment of a body of regularly educated medical practitioners in England, although certain individuals had been previously acknowledged and admitted as Physicians and Surgeons to several preceding Kings and Princes. John Arundel, John Saceby, William Hatcliffe, were Physicians to Henry VI. and Robert Warren and John Marshall were appointed Surgeons to his Majesty.—See *Rymer's Fœdera.*

In this year another Act was passed for "Barbers "and Surgeons." The objects of it were to unite the Barbers and Surgeons into one company, to exonerate them from the duties of watch and ward, attendance on juries, and of bearing arms; to take, annually, four bodies of condemned persons "for anatomies;" to interdict *Surgeons* from shaving, lest they should communicate infectious diseases to people resorting to their shop; and, also, to prevent Barbers from performing any Surgical operation, except drawing teeth. The Surgeons were enjoined to put an "open sign on "the street side where they shall fortune to "dwell," to inform people where to obtain prompt assistance.*

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* The long pole, with a painted band in a spiral direction from top to bottom, still observed at the door of the village barber, is one of the insignia of the Surgeon's art, and a relick of this law. The fillet is intended to represent the bandage for the arm, the pole to be held as a support, during the operation of bleeding.

A Bill was passed in the 34th and 35th of this reign to enable charitable persons to administer certain medicines for the relief of the poor, " only " for neighbourhood and God's sake, and of pity " and charity," and also to apply external remedies, without being liable to suit or penalty.

An Act was made in the 1st of Queen Mary, (anno 1553) recapitulating the last charter to Physicians, giving them the power of committing offenders to prison, and of levying penalties on those who resisted their search for " potticary " wares, drugs, and compositions." Magistrates and parochial officers were ordered to assist the President and Censors of the College of Physicians in their search.

A charter was granted in the 7th year of Elizabeth to the College of Physicians, permitting them to have four bodies of malefactors, who had suffered the sentence of the law on account of homicide or felony, for dissection annually. The Act is in Latin, and worded thus : " *Quod habeant* " *et accipiant, annuatim, temporibus futuris im-* " *perpetuum, unâ vice, vel diversis anni vicibus ad* " *discretionem, voluntatem et libertatem prædicti* " *presidentis.*" The object of this grant was to improve the knowledge of the medical art; it is thus *literally* expressed in the charter, " — *ad* " *incrementum cognicionis medicine experimentum* " *ejusdem et ad salutem ligeorum nostrorum sine* " *contradictione alicujus, et hoc absque ulla pecu-* " *niarum summâ vel ullis pecuniarum summis, pro* "*eisdem reddend', seu cuicumque solvend'.*"—The President and Fellows of the College were enjoined to commit the bodies decently to the earth at their own expense after the investigation, or dissection.

A charter was granted in the 4th of James I. (anno 1607) the object of this was to form the Grocers and Apothecaries of London into one Company, by the name of the Grocers of the City of London, as expressed, "for the profit, com-"modity, and relief of the good and honest, and "for the terror and correction of the evil, deceit-"ful, and dishonest."

In the year 1616, being the 13th of James I. another charter was made, to separate the Apothecaries from the Grocers, and form them into a distinct company. This charter was granted at the request of certain Apothecaries, and the recommendation of Doctors Mayerne and Atkins, Physicians to his Majesty: its principal objects were to exclude ignorant persons, and punish those who sold bad medicines. The provisions are judicious and explicit, and such as, if duly enforced, would have prevented the nefarious practices of trading chemists and druggists (see Chapter VI.) and the admission of unqualified persons, calling themselves Apothecaries. The act is in Latin, and expresses in the preamble: "*Quod hisce proximis annis quamplurimis, em-*"*pirici et homines ignari et inexperti in civitate* "*nostra* LONDON, *et ejusdem suburbiis inhabitant* "*et commorantur, qui in pharmacopoli arte et* "*mysterio haud instituti, sed in eàdem imperiti* "*et rudes, insalubria, nociva, falsa, corrupta, et* "*perniciosa, faciunt et componunt medicamenta,*" &c. Its provisions were in the usual form, to elect a Master, Wardens, and proper officers; to enable them to make bye-laws, to take apprentices, levy fines and penalties upon delinquents. It ordains, that no Grocer shall keep an apothecary's shop; that every Apothecary shall have served an apprenticeship of seven years, before he is permitted to keep a shop, or to act as an apothecary, that every apprentice, *at the expiration of his apprenticeship*, must be examined before the Master and Wardens, to *ascertain his fitness*, before he is suffered to commence business.

The Act, also, invests the chartered body with a power to examine all apothecaries' shops for medicines: "—*et ad supervidend', scrutand', et pro*- "*band', si eadem medicamenta simplicia, merces,* "*drogma, &c. sint, aut erunt bona, salubria, medi*- "*cinibilia, apta et idonea ad curam, salutem et* "*relevamen subditorum nostrorum.*" It contains a clause permitting Surgeons to have such medicines as are by them employed for external purposes; but prohibits Surgeons from selling, or exposing them to sale in a shop; these privileges being exclusively in favour of Apothecaries.

In 1618, being the 15th of James I. a charter was granted to the College of Physicians, confirming the privileges and immunities of all the previous Acts, and investing it with a power to call before the President and Commonalty all Apothecaries and dealers in Medicines, to judge of their qualifications, to punish delinquents by fine and imprisonment. The Apothecaries were compelled to testify against unlawful practisers of physic, and to forfeit twenty shillings if they refused to do so.

In the 15th year of Charles II. a new charter was granted to Physicians, in the name of "The "President, Fellowes, and Commonaltye of the "King's College of Physicians in the Cittie of "London." This charter, in the preamble, confirmed them in all former powers and immunities, augmented the number of Fellows to forty, the Elects to ten, including four Censors: it described with much precision, the future regulation of college-affairs, both respecting its internal management and its control over illegal and unqualified practisers of physic, venders and compounders of drugs, who are rendered liable to fine and imprisonment.

In the 6th year of William III. (1694) an Act was made to exempt *Apothecaries* from serving the offices of constable, scavenger, and other parish and ward duties, and from attendance upon juries. The reasons adduced for the expediency of this Act are expressed in the following words: "Whereas the art of the Apothecary is of great "and general use and benefit, by reason of their "constant and necessary assistance to his Majesty's "subjects, which should oblige them solely to "attend to the duties of their profession," &c.—

The same exceptions were extended to country Apothecaries *who had served an apprenticeship of seven years.*

In the 18th year of George II. (1745) an Act was made to separate the Surgeons from the Barbers' Company; these had been united in the 32d of Henry VIII. (1540.) The reasons stated in the preamble are, that "Those of the said company practising Surgery have, from their sole "and constant study of an application to the said "science rendered the profession and practice "thereof of great benefit to this kingdom, and "whereas the Barbers belonging to the said Corporation are now, and for many years have been "engaged and employed in a business foreign to, "and independent of the practice of Surgery," &c. This Act provided the Corporation of Surgeons with a power to choose a Master, Governors, and Assistants, to hold courts, make bye-laws, appoint Examiners, and to fulfil the duties of their association from the 24th of June, 1745. It granted them the usual exemption from parochial duties, military service, and attendance on juries.

The last statute relating to Surgeons was passed in the 40th year of his present Majesty, dated 22d of March, 1800, and establishes them by the name of *The Royal College of Surgeons in London.* The preamble of this Act recapitulates and confirms all the previous grants to Surgeons, invests the College with a power to manage its own affairs, by a principal Master, two Governors, and a Court of Assistants, to make bye-laws, appoint Examiners, and take fees for the examination of those, who are desirous of being admitted Members, and also candidates for the service of the Army and Navy.

These being the only *statutes* made for the regulation of the medical profession, and *charters* granted to the Physicians and Surgeons of England, it remains to be seen, in what manner the intentions of their enactment have been fulfilled, and whether they are fully adequate and properly adapted to supply the indispensable wants of the public *in the present state of society*, by providing a sufficient number of duly educated practitioners in Medicine and Surgery, to ascertain their qualifications, to distinguish them from illiterate and ignorant pretenders, *to secure to them the entire management of the sick, and to afford an effectual protection to the public* from the dangerous, and often fatal interference of an immense multitude of persons, who daily presume to regulate and restore health, without possessing a knowledge of the only principles which can afford a reasonable hope of success.

The Universities of Oxford and Cambridge confer degrees of *Doctor in Medicine*, rather by distinction, as a course of academic discipline from theoretic doctrines, than as a consequence of full qualification in the art of curing diseases, there being no *efficient* school of medicine or anatomy in either University: and these Doctors become candidates, and are admitted as Fellows of the Royal College of Physicians in London, without any farther examination than such as they had sustained at the University: they enjoy all the emoluments of the College, and, *exclusively*, regulate its affairs. After leaving the University, or during the interval of keeping the terms, they *always* go through a course of anatomical and medical studies, in London or Edinburgh. What stronger evidence, what better proof need be adduced of the present superiority of LONDON, as a medical school for practical instruction? The means by which it has become so, *since the first establishment of the College of Physicians*, will be explained in the next chapter.

CHAPTER III.

ON THE CAUSES OF A NECESSITY FOR THE EXTENSION OF MEDICAL INTERFERENCE.—PROCEEDINGS OF THE COLLEGE OF PHYSICIANS.—FIRST ASSUMPTION OF THE PRESCRIBING APOTHECARY; HIS FORMER AND PRESENT MEANS OF OBTAINING INFORMATION IN ANATOMY, SURGERY, AND THE PRACTICE OF PHYSIC, IN LONDON.

IT may be assumed, without the suspicion of inaccuracy, that the state of society in England, at the period of the first incorporation of the Physicians in the reign of Henry VIII. was widely different from that of the present time. Just emerging from the trammels of feudal vassalage, and not then enriched by the establishment of extensive manufactories and abundant foreign commerce, the nation consisted of the nobility and a few opulent citizens; the people were miserably poor: their plain fare, and coarse, but warm, woollen clothing, prevented them from suffering under many infirmities, which persons in a similar class of life are now liable to, by the more general use of spirituous liquors, and other enervating habits, the inevitable result of increasing national opulence, which have long been, and continue to be, operating, particularly in large towns, as manifold causes of indisposition and disease.

The Physicians at the period alluded to, were not numerous; they held a rank in society next below the younger branches of noble families (still maintained in the annals of precedence at court); were highly esteemed and duly rewarded; for their practice was amongst the nobility and rich citizens. The poor and general community, not possessing the means of obtaining the advice of the learned, by giving an adequate remuneration, usually committed themselves to the management of those illiterate persons, who, in every country, and at all times, have had their traditionary nostrums of herbs and compounds, and they must have frequently perished from the want of judicious aid, or have been destroyed by the temerity of mountebanks, and other dangerous pretenders; for the principal hospitals now in London, and other cities of England, were not then in existence.*

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* St. Bartholomew's Hospital was founded by Henry VIII. in 1539, and rebuilt by subscription in 1729. It is adapted for the reception of more than 400 patients.

St. Thomas's Hospital was founded in the reign of Edward VI. 1553, and can accommodate 460 patients.

Bethlem Hospital, in Moorfields, for the reception of insane persons, was founded in the reign of Edward VI. and rebuilt in 1676.

The Westminster Hospital, near Buckingham-Gate, was instituted in 1719, and has been always supported by voluntary contributions.

Guy's Hospital was built and endowed in 1721, at the sole expense of Thomas Guy, Esq. formerly a bookseller in London: it contains 430 beds, besides a ward for lunatics.

St. George's Hospital was opened for the reception of patients in 1734: it contains above 250 beds. The building is now under re-

In succeeding reigns, particularly during the pacific government of Queen Elizabeth, the progression of commercial prosperity, and the increasing population of England, were conspicuous,*

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pair for its general improvement, and it is expected to be soon enlarged, in consequence of the munificent gift of a late testator.

The London Hospital was instituted in 1740, and built in the Whitechapel Road, at the east end of the metropolis: it contains about 260 beds.

The Middlesex Hospital was instituted in 1745, and contains 150 beds.

The Lock Hospital was established in 1747, for venereal patients only.

The various Lying-in Hospitals and Dispensaries in different parts of the metropolis, have only been in existence since the year 1750. They are supported by annual subscriptions and the occasional bequests of charitable persons.

* In the early periods of English history, it will be found, that the principal artificers and men of scientific knowledge residing in England, were foreigners. This was not derogatory from the quality of mind of the natives of Britain. The revival of the arts having commenced on the continent, the inhabitants of certain parts of it were a century advanced in the establishment of manufactories and commerce. The Venetian plate-glass, the Cordovan leather, the Toledo steel, &c. are proofs of this early superiority, which has long ceased to exist, by the unremitting industry and commercial enterprise of England. In the reign of Henry VIII. it was alleged as a complaint, that the natives could not support themselves by trade, on account of the superior ingenuity of foreigners.—See *Hume*, Vol. IV. page 475. The tyrannical and military government of Philip II. in the Netherlands, which were then an appendage to the Spanish crown, caused an immense emigration of cloth-weavers to England; they were encouraged by the prudent government of Elizabeth: and this may be considered the first step to the

causing a rapid augmentation of the middle classes of community, and an improved condition of the lower orders of people; and, in subsequent reigns, the influence of these causes upon the physical power and moral faculties of man, had evidently produced the effect of rendering it no longer possible for the Fellows of the Royal College of Physicians and their Licentiates *to prescribe for all who required assistance.* During this increase of general prosperity, the Physicians found a proportionate and sufficient practice amongst the opulent, *without reducing their fee, or expectations of remuneration, to the ability of the common people,* who were obliged to resort to unqualified, or unauthorised persons for medical aid, and the Apothecaries were principally applied to, as those persons, who were likely to have obtained some knowledge of diseases, and a suitable application of remedies, because the preparation of medicines from the prescriptions of Physicians, and the occasional administration of them in the sick chamber, under their direction, constituted the duties of their occupation: from

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attainment of our national prosperity in the cloth trade The persecution of the Huguenots, or Protestants of France, in the reign of Lewis XIV. caused a great expulsion of useful and industrious persons, who found their way to England during the reign of William III. and brought over the improved art of silk-weaving: they were named *the French refugees,* and principally settled in that suburb of London called Spitalfields, which is now proverbial for its numerous silk-looms: hence may be dated the origin of our prosperity in this trade.

this period may be fairly dated the commencing practice of the Apothecary, as *a prescriber for those persons, who were unable to fee a physician.*

The successive extension of power obtained by the College of Physicians, in the Acts enumerated, and the pertinacious defence of their chartered privileges, as exemplified in the frequent former prosecution of irregular practitioners, and even of educated persons,* are proofs of their desire to possess the exclusive permission to practise the profession of medicine; but this must have become evidently impossible, without a very great increase of their number, and a considerable reduction of their fee; objects of serious import to the existing members of a chartered body, which, not being deemed expedient to concede, the public were abandoned to their fate. This is the only view of the subject which can account for the infrequency of prosecutions by the college within the last hundred years, by their tacit acquiescence in the *necessity* of an extended professional interference, and in the custom of consulting the Apothecary *in cases of minor importance;* for, the establishment of public lectures on anatomy in London, about that time, offered an opportunity to the Apothecary to obtain such further information as enabled him to relieve his patients with more certainty and precision than before. The great increase of teachers in LONDON, of Anatomy and Surgery, of the practice of physic, chemistry, and all the sciences connected with the medical profession, soon rendered the metropolis (although not dignified by the appellation of an university) the best school for instruction and practical information; and those students, who had previously received a literary education, attended their classes in anatomy during the accustomed period, and had become pupils of a Surgeon and Physician in one of the public hospitals, would be as accomplished in useful knowledge, and more familiar with disease and remedy (although not called Physicians) than those, who had passed many years in an university, where little more than literature and *theory* in medicine could be obtained, or in a medical school more limited in its means of permitting anatomical research, or of affording medical and surgical information. The names of Cheselden, Douglas, William Hunter, and Nichols, professors of anatomy in London, at the beginning and middle of last century, followed by Cline and Baillie, by Cooper, Abernethy, Brooks, Carpue, and others of merited celebrity in anatomy and surgery; the names of Saunders, Fordyce, Pearson, Crighton, Babington, and Hooper, as teachers of the theory and practice of medicine and chemistry; of Orme and Lowder, Osborne, Denman, Haighton, Thynne, Clarke, and Merriman, in midwifery, are indisputable proofs that the opportunity of attaining scientific information, has long been at the command of every one, whose duty or interest rendered it necessary to be instructed in, and fully qualified to practise, every department of the profession. It is astonishing, it must also appear extraordinary, if not ridiculous, to Foreigners, that London, the British metropolis, universally acknowledged to be the centre of perfection in every practical department of the liberal arts, the *punctum saliens* of science, should not have been, yet, dignified by the establishment of an university, and, that young men, expensively and carefully educated to the medical profession, however regular in their attendance at the lectures of the most celebrated Professors, however diligent in their researches, by patient investigation of the objects of their pursuit, in the most fruitful field of instruction. The hospitals of London, should not have been yet recognised as *legal agents* for the cure of diseases, and that, when endeavouring to obtain an honourable distinction in society, proportioned to their attainments in science, they should be avowedly, or clandestinely opposed by the *governing members* of certain bodies, chartered for the expressed purpose of improving the medical profession, and protecting the public from the dangerous effects of its abuses. May not a longer sufferance of these things be considered an insult to the metropolis, and a libel upon the nation?

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* See Goodall on *The Royal College of Physicians,* a book of authority, compiled by one of its members, and containing an account of the litigations alluded to.

The successive extension of power obtained by the Surgeons of England, and their present establishment as a Royal College, render it obvious, that such a body is invested with *a power to protect its* *own members*, and to enable them to recover a reasonable sum in the Courts of Law, in all cases of professional attendance *in their particular department*; and the term Surgeon-Apothecary, which is not used in any Act, may, at first sight, appear singular; but, when it is remembered that the Surgeons of the present day, who profess their own division of the healing art, and do not unite Pharmacy with it, are small in number, that they receive fees as large and as frequently as Physicians, and expect to be paid at an high, although not undeserved rate, in cases of general attendance, that they are usually Hospital-Surgeons, or Lecturers on Anatomy, moving in an elevated sphere of life; it becomes evident, that the services of a practitioner of this description, *on every occasion*, like those of the Physician, are attainable only by patients of a certain class—The Opulent.—The same reasons, therefore, which compelled the public to seek relief from the Apothecary in medical cases, induced them to solicit surgical assistance *in affairs of minor importance*, and became a motive for the Apothecary to qualify himself by study and observation, as before explained, to manage such cases at less comparative expense to his patients, and, on extraordinary occasions, to request the concurrence, or assistance of an Hospital-Surgeon.

The Apothecary, by rendering himself qualified, passing an examination in the Corporation or College of Surgeons, and adding Surgery to Pharmacy, became a Surgeon-Apothecary, or general practitioner: for there is no provision in the laws of the College of Surgeons *in England* to prevent its members from practising as Apothecaries, nor in the charter of Apothecaries to restrain its members from studying surgery. The *medical* practice, however, was first assumed by Apothecaries, whom the Author, on that account calls *prescribing* Apothecaries; "He is the physician to the poor, at all times, and to the rich, whenever the disease is without danger."—*Dr. A. Smith's Wealth of Nations.* The Surgeons remained longer a distinct branch of the profession, but they have been gradually combining the practice of physic with their art, and now constitute the most numerous class of general practitioners in England and Wales.

The knowledge of Medicine and Surgery, then, has become widely diffused. Individual excellence will always exist in these, as in other sciences; superiority will be obtained by quickness of perception, by steady, and patient attention to the subjects of observation and the objects of research: but it is obvious, it must be conceded by impartial and unprejudiced persons, that every young man of moderate capacity, who had received a literary education, served an apprenticeship to a respectable Apothecary, then dissected under a teacher of Anatomy, attended the various lectures in London upon the practice of Physic, Surgery, Chemistry, and sciences connected with medicine, frequented the wards of an Hospital during at least twelve months, and afterwards passed an approved examination before a board consisting of Physicians, Surgeons, and Apothecaries, *(a tribunal not now in existence, and which it is the principal object of the present association of Surgeon-Apothecaries to institute, under the sanction of Parliament,)* would be competent to discharge the manifold duties of a Surgeon-Apothecary, or general practitioner, with honour to himself and advantage to the Public; and that he would be, in reality, a man of the same class as those who obtained the first charter of incorporation as Physicians under Henry VIII. designated as persons learned in the science of physic and the knowledge of surgery, "as a special " member and part of the same."

CHAPTER IV.

ON THE UTILITY OF THE PRESCRIBING APOTHECARY, SURGEON-APOTHECARY, AND GENERAL PRACTITIONER.

THE association of ideas with terms, or of names and things, is often continued after their relative connections are much altered; and this change is not always perceived, even by contemplative persons, until their attention is directed to it by a fortuitous event. The name of Apothecary, originally given to a mere compounder of medicines, and strictly referable to him in England two centuries ago, when their charter was first granted, has been imperceptibly continued, and is still indiscriminately used, to designate those also, who have gone through the regular medical education already described, and who are fully qualified, and daily accustomed to direct the application of medicines for the removal of every disease incident to the human body, by first prescribing and then superintending the preparation of their remedies, according to the usage of the primitive physicians.

The medical character, whether Physician, Surgeon, or Prescribing Apothecary, should be a man of integrity, urbanity, and sedateness, patient of fatigue, and ever ready to extend the beneficial influence of his art upon principles of enlarged philanthropy:* he must necessarily sustain many privations of comfort and of rest by the sudden and urgent calls to administer relief, and, indeed, to be extensively useful, he must often indulge his better feelings at the expense of his convenience, by affording assistance, without the hope, or expectation of pecuniary reward.

In a climate of proverbial diversity, with numerous manufacturing towns of superabundant population, requiring large associations in workshops, and confined air in the pursuits of unhealthy trades: In a country of much general opulence, which enables tens of thousands of individuals to lead a life of luxurious ease, partial or general, more or less removed from a state of nature, both in diet and exercise, the functions of the human body will be very frequently deranged, and require the aid of those, who are skilled in the motions of its complex machinery to regulate them, with rational expectation of success: it becomes, therefore, an object of serious consequence to community, of real importance in the strength of a nation, and, *on these accounts*, of proper consideration to Legislators, that this high trust should be committed to those men only, who have given proofs of ability to fulfil their assumed duties, and, it will not be denied, that they should be held to the discharge of those duties by a heavy responsibility.

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* From the period of Hippocrates to the present time, these sentiments have been inculcated, and, by the generality of regular practitioners, remembered and closely followed. See the works of Hippocrates, ὁ ορκος—περι ἰητρου—περι ευσχημονης, also Dr. Gregory's *Duties of a Physician*, and Dr. Perceval's *Medical Ethics.*

The establishment of Physicians, and their limited sphere of practice, having been distinctly shown, and those causes explained, which rendered the extension of medical assistance absolutely necessary for the welfare of community; the period of the first assumption of a large body of men (the prescribing Apothecaries, or Surgeon-Apothecaries) to the important task of regulating the Health of the middle and lower orders of society on general occasions, and their present means of becoming qualified for its performances elucidated; it may be desirable to ascertain the principles on which the services of such a body of educated practitioners can be made most useful to the public; by which means they can be clearly distinguished from those, who affect their name without possessing the requisite qualifications, thus committing a double fraud, first upon the community, by their ignorant and dangerous presumption; and, secondly, upon the regular members of the medical profession, by abstracting a portion of their occupation, and degrading the general estimation of a learned and liberal art.

The Collegiate Physician will always retain the most distinguished rank in the medical profession. The Professor of Anatomy, being usually an Hospital-Surgeon, in the daily, or frequent habit of performing the great or difficult operations, must ever maintain a superior distinction in his line of practice. The remuneration for their services is proportioned to the estimation of their talents; it has always been, and must continue to be, great.

Since, therefore, the Physician and the *mere* Surgeon can only be feed by a small proportion of community as often as their attendance may be necessary to restore health, or regulate it under protracted suffering, the alternative is, either to reduce their demand to the circumstances of the generality of patients, or to recognise and support a body of men, who are ready to give proof of having acquired sufficient knowledge to enable them to do the duty of physicians, in ordinary cases, at a rate of charge better suited to the ability of their patients to bear. And these persons, the Surgeon-Apothecaries, are rather compensated by the multiplicity of practice, than by the expense to individuals; they have thus become the general practitioners throughout England and Wales: so that the health of, at least, nineteen of every twenty patients, is now regulated by them *alone:* but in cases of difficulty, doubt, or danger, they request the assistance of a physician, and, in surgical affairs, of an Hospital Surgeon.

This may be relied on, as a correct account of the present relative situation of the practitioners of Medicine and Surgery in London, and the cities, or large towns of England and Wales. There are a few, who confine themselves to particular departments of Surgery, and are called, Oculists, Cuppers, and Dentists; and even some are self-named Aurists, and Chiropedists; but these artificial subdivisions have obtained, rather from convenience than necessity: they can only exist in large towns, and the latter are unknown out of the metropolis.

CHAPTER V.

ON THE PRACTICE OF MEDICINE AND SURGERY IN PROVINCIAL DISTRICTS.—THE PREVALENT CUSTOM OF OVERSEERS IN CONTRACTING FOR THE MEDICAL CARE OF PARISH PAUPERS.—ITS DEFECTS AND ABUSES.

IT has been seen that the opportunities of obtaining Medical and Surgical information in London, are very ample, and sufficient for every useful purpose of professional life. A great number of young men annually come to the metropolis from various districts of England and Wales, and from other parts of the British Empire, to complete their education by a course of study, which can be proved by the certificates they possess of Lecturers and Hospital-Surgeons. These persons, if they have imbibed early instruction by an apprenticeship, and been diligent in their attendance on the Professors in London, return to their local connections, usually, as well qualified to practise as their age will permit; and, being acquainted with the principles of science, every day's experience rapidly increases their knowledge, so that, by attentive observation, they soon become able practitioners, resident in various parts of the country.

This is the proceeding of the well-educated Surgeon-Apothecary; but many young men *have not* served an apprenticeship; others remain too short a time in London to completely fulfil the intention of their journey, and return imperfectly qualified to practise their profession; and, as *there is not any tribunal to which they are accountable for their attainments in the knowledge of the practice of physic and of midwifery,* every one may learn as much or as little as it may please him. It is not surprising, therefore, that the indolent and the volatile, frequently, avail themselves of this latitude to indulge their propensities, at a period of life when the passions are most predominant, too often presuming, that, if they have remained the full term of study, they have *a right* to be considered competent. To render diligence *indispensable* to honourable distinction, and to insist on the qualification of every individual to whom the public may entrust themselves with the most rational hope of successful care, have been objects to which the Committee Associated Surgeon-Apothecaries are directing their principal attention.—(See their Resolutions in Chapter X.) Many young men obtain a partial or general education, and go into the Army and Navy as Assistant-Surgeons, or Hospital-Mates; and, in due time, are promoted to the care of battalions and garrisons: but the difficulty of obtaining able assistants for these important services, is extreme: for, it is a lamentable fact, that the indirect encouragement given to pretenders, by the apathy of the legalized medical authorities, has often deterred the parents of young men of respectable families, and good education, from placing them in a profession, which, as it is now constituted, neither offers the certainty of an honourable distinction, nor of a preference in the employment of their time, and exercise of their talents, after a long and expensive, but necessary and useful, education to the duties of their life.

The practice of the profession in small towns and villages of England and Wales, amongst wealthy residents, being very limited, the care of the parochial poor becomes an object of consideration. The general competition amongst *educated* practitioners, would be sufficient to insure the performance of the duty at a moderate charge; but it has been the prevalent custom of Overseers, usually farmers and illiterate traders, who have not correct notions of the true medical character, to receive annual tenders, at Easter, for the medical care of the sick poor of the district, and, regardless of their comparative merits, the lowest bidder is the successful candidate. The certain effect of this usage is, to throw the general management of paupers into improper hands. Competition ceases to be fair when its conditions are, not equal, and, as the time of an irregular, or a partially qualified man, is not intrinsically worth so much as that of the regular practitioner, those people avail themselves of this opportunity of a medical introduction into the families of the Overseers and farmers, by whom they are mostly employed, when dignified by the name of the Parish-Doctor, by undertaking a task which they are not qualified to perform, upon terms which are totally inadequate to pay even for the cost of the medicine required in the judicious execution of the duties. The Author is in possession of letters from SUSSEX, KENT, WORCESTERSHIRE, ESSEX, LINCOLNSHIRE, DORSETSHIRE, DEVONSHIRE, YORKSHIRE, HAMPSHIRE, MONTGOMERYSHIRE, and SUFFOLK, *all written within the present year*, which elucidate this subject, by describing and giving instances of the unfeeling conduct of overseers, and the gross ignorance and culpable negligence of such Parish-Doctors, in terms of accurate definition and just reprehension. Well might a living poet exclaim, in his description of one of these wretches,

> " A potent quack, long versed in human ills,
> " Who first insults the victim whom he kills,
> " Whose murderous hand a drowsy bench protect
> " And whose most tender mercy is neglect."

The encouragement given to such men in the country, must be a cause of reasonable complaint to all regular practitioners, by a partial abstraction of their occupation: it must also be a prolific source of private misery, and even of public calamity, until it can be proved, that the well-being of the poor has no reference to the strength of the nation.*

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* A letter from Weymouth, after noticing the general apathy of Overseers, and their shameful neglect of the poor, respecting medical assistance, observes, that an impudent quack in that neighbourhood has the management of the paupers of a parish, by order of the

When the duly educated Surgeon-Apothecary shall be recognised in his proper character, and protected by the operation of just and equal laws, these abuses will cease to exist, and, in the interval, the Author would advise those Gentlemen, who represent counties and towns in Parliament, and those, likewise, who act as Justices of the Peace in the country, to exercise their philanthropy, by endeavouring to lessen the weight of poverty in recommending, or *insisting*, that none, except properly qualified persons, be employed in the medical care of parish-paupers.

The number of uneducated persons, who exercise the profession of Medicine and Surgery in its various departments, is almost incredible to those, who have not investigated the subject. When an inquiry was instituted in Lincolnshire, in 1804, to ascertain the particulars: Dr. Fawssett was appointed Vice-President for the Horncastle distrist, and made his report, that, in his division, including the market-towns of Horncastle, Spilsby, Alford and Tattershall, there were five physicians, all graduates of Scotland, eleven Surgeon-Apothecaries, twenty-five Druggists, forty irregulars of both sexes, over and above the Druggists, sixty-three Midwives, *not one of whom had received any instructions:* making an

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Overseers: he was a Barber, then an Inn-keeper, now a Farmer and Parish-doctor! The same intelligent writer gives an account of a patient who came under his care: An untaught midwife had been attempting to facilitate the birth of an infant, by using a pair of scissars! The mother was rescued by judicious aid: the child was already lost.

aggregate of 144 persons, exercising medicine for gain in that district, of whom only *one in nine* had been previously educated for the profession. Mr. Shuttleworth, Vice-President for the Market-Razon district, comprehending the market-towns of Wragby, Razon, and Castor, reported, that no Physician resided in his division: seven regular practitioners as Surgeon-Apothecaries, nine Druggists, *one* of whom served an apprenticeship, seventeen irregulars of both sexes, over and above the Druggists: one of the men follows Midwifery; thirty-two Midwives, not one of whom had received any instructions: in all, sixty-five persons, exercising medicine for gain, of whom, not one in nine had been previously educated for the profession. The example of Lincolnshire may serve for that of other counties. In the enumeration of persons, who exercise medicine for profit, without a previous education, it is to be understood, that the employment of many may be very limited, and of some not entirely confined to it as the means of existence: yet, when it is considered, that each individual, through ignorance of proper means, and misapplication of active remedies, may destroy, at least, one person annually, and ruin the health of many more, what a frightful calculation of human affliction forces itself upon our notice! Surely this is a subject worthy of the immediate attention of Parliament. The lives of individuals are no less dear to their families, and His Majesty's subjects are no less useful to the state, in every corner of the kingdom, than in the metropolis and its precincts of seven miles.

CHAPTER VI.

ON GROCERS, DRUGGISTS, RETAIL CHEMISTS AND DRUGGISTS, AS SHOP-KEEPERS, NOT EDUCATED AS APOTHECARIES OR SURGEONS.

THE Charter of 1607 proves that the Grocers and Apothecaries were, originally, united in one corporation, and separated in 1616, by a special Act of James I. The Grocer, who imported sugar, figs, dried fruit, and spiceries, chiefly from the West Indies, Italy, and the Levant, was a merchant, who extended his orders for rhubarb, senna, and such other foreign drugs, as were employed in the practice of physic; hence arose the name *Druggist;* but the practices of these drug-dealing Grocers having became notorious, and the improving state of the science of Medicine in England, having, at this time, rendered it expedient to separate the occupations, the Apothecary was established under the auspices of the College of Physicians, as the *only legal preparer* and compounder of Medicines, with responsibility for the genuine quality of his commodities and the correctness of their preparation.

Every attentive spectator of the habits and usages of mankind must have remarked, that some occupations increase, whilst others diminish, and that all experience a fluctuation, and accommodate themselves to the fashion of the times. From the recent multiplication of retail Chemists' shops, which are to be seen gaily decorated in every large street, principal thoroughfare, and conspicuous situation of the metropolis and provincial towns, it may be fairly presumed that this is a lucrative occupation, or they would not have become so numerous; that they will ultimately find their level, according to the maxim of that discriminating Author, Dr. Adam Smith, and stand or fall by the test of their general utility, is a truth not to be doubted: but, in the interval of their existence, it may be useful to inquire, and, at present, requisite to ascertain, how far the *new trade* of Retail Chemist and Druggist, or dispenser of Medicine, has interfered with the business of the Apothecary.

The Author disdains falsehood, he wishes to dismiss from his mind all prejudice and partiality by taking a candid view of the whole subject, convinced that the attempt to misrepresent, besides being an unworthy motive, always fails in the attainment of its object; and, that no cause can be well advocated by a distortion of argument, or interested concealment of facts: he has already acknowledged the assumption of Apothecaries to the office of the Physician *in cases of minor importance;* but he presumes that he has explained the causes leading to a necessity of their interference and proved their qualifications to perform their task with advantage to the public; he may be, therefore, permitted to inquire, whether the multiplicity of retailers, and *indiscriminate* compounders of Medicine, has become equally necessary for the convenience of the public, and conducive to its welfare. The Author will not attempt to question the right of every individual to purchase his rhubarb and senna where it may best please him, nor to deny the privilege of sending the prescription of his Physician to the Chemist's, instead of the Apothecary's shop: This becomes an affair of choice, and, if that preference be dictated by reason, or interest, it ought to prevail, notwithstanding the murmurs and jealousy of the Apothecary. Competition is the spirit of trade, but to be fair and honourable, it should be equal, and subjected to the test of accurate discrimination.

There is a very old maxim, that " The end of trade is gain," and the means of obtaining that end being as referable to the sellers of drugs, as of every other commodity, we must presuppose a degree of moral rectitude in them, superior to that possessed by other traders, before we can be persuaded, that retail Chemists and Druggists pursue it differently from general dealers; for, it must be remembered, that *they* have no responsibility for the effects of the compound; and, provided it pass without disapprobation, are secured from reproach, or calumny; and it is an unfortunate truth, that, in proportion to the difficulty of detection, so will be the temptation to deceive. But the Apothecary, who is, usually, the personal friend of his patient, and, who watches the effect of the Medicine prescribed by himself, or prepared by him, during his co-attendance with the Physician, has a real interest in its due operation, and of course, a regard for its intrinsic qualities and accuracy of preparation; and, although it might be presumptuous to say, that Apothecaries are more wise, or virtuous, than other men, yet it is obvious, that they would be the most immoral and profligate of community, not to be influenced by feelings and motives which cannot be equally referable to the retail Chemist and Druggist, who neither witnesses the sufferings of the patient, nor, in general, has any personal knowledge of his family.

The abuses of the drug-trade and sophistications of indiscriminate compounders of Medicine had become notorious twenty years ago, when a considerable number of Apothecaries and Surgeons entered into an investigation of the subject, with the intention of correcting them; but they were, at that time, unable to effect so laudable a purpose. It was ascertained, that the ignorance particularly of country Druggists, and drug-dealing Grocers, had been productive of lamentable and fatal effects. The Committee appointed for such investigation, had numerous proofs of the existence of frauds and abuses, and observed in their Report: "With "respect to the Druggists, they knew it to be an "incontrovertible fact, that, independent of the "varieties of the same materials, varieties of different value, which they keep continually in "their warehouses, and to which they have recourse, and vend, according as circumstances "require; they knew it to be a fact, that few or

" no Druggists compound the preparations of the " Pharmacopæia of the College of Physicians, in " all cases, consistently with the express injunc- " tions of the Pharmacopæia; on the contrary, that " they have, nearly all of them, nostrums and re- " ceipts of their own, from which these prepara- " tions are compounded; preparations, indeed, " which may pass under the respective titles given " in the Pharmacopæia, and which, in general, " may elude the eye by a similarity of colour, and " sometimes, even the tongue by a similarity of " taste: but which are, in all instances, infinitely " less efficacious, and are only compounded in a " different and clandestine manner, because they " can thus be compounded much cheaper, or with " more ease.*

With a sincere wish to abstain from personalities, and to avoid giving reasonable cause of offence, but with a firm determination to expose and to reprobate whatever is considered unjust, or delusive, the Author does not hesitate to declare, that the scandalous and illegal practices alluded to in the above quotation, still prevail to a dreadful extent. Let the Censors of the College of Physicians (see page 11) and certain officers of the Company of Apothecaries (see page 14), whose duty it is to inspect the quality of Medicines, visit the warehouses and laboratories of the *wholesale* Chemists and Druggists of the metropolis, *which they have not done of late*, and they will find this assertion frightfully verified. The Roman poet could have applied this verse in a medical sense with strict correctness,

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* See Good's History of Medicine, 2d Edition, published in 1796.

> " Hoc fonte derivata clades
> " In patriam populumque fluxit."
>
> HORAT. *Carm.* 6. *Lib. III.*

It is acknowledged, that they go round the town, now and then, and examine the petty shops of little dealers, which contain but the litter of a day compared with the Augean stables above described. They seem to forget, that, *from contaminated sources, the stream must be impure.* The retail Chemists and Druggists of the metropolis and some provincial districts, and those practitioners of pharmacy, who are not members of the Apothecaries' Company, or who do not purchase from their stock, must be supplied by the manufacturing Chemists and wholesale Druggists. The ability of these dealers to prepare all Medicines with correctness is not questioned; but, so long as the supervising control of the Censors of the College of Physicians, and the proper officers of the Apothecaries' Company, shall remain a dead letter *as far as regards them*, the competition in trade, by endeavouring to undersell each other, will continue an inexhaustible source of domestic calamity and public mischief.

> —— Quid non mortalia pectora cogis
> Auri sacra fames?
>
> VIRGIL. *Æneid. Lib. III. v.* 58.

Magnesia, the volatile aromatic spirit called Sal

Volatile, lenitive electuary, and many other articles, will be found different from those made at Apothecaries' Hall; this is an assertion, which admits of easy proof, by purchasing a small quantity of such things at the shop of the Chemist and of the Apothecary, who is a member of the Company. It might be speciously alleged by the Chemist and Druggist, that, although there may be a difference in smell and taste, his commodities are equally good: but, it could be answered, that his *opinion* is not required, that it is his *duty* to produce the identical compound, which bears the name given to it by the Royal College of Physicians.

The stuff called *cake-saffron* is a farrago of any thing but saffron, with a thin layer of the genuine stigmas placed at top and bottom; the whole is then pressed into a cake, which has an imposing exterior, and passes under the name of the drug: but it is so manufactured for cheapness, and is sold by the wholesale to the retail Chemist and Druggist, for about one third the price that hay-saffron (the thing recommended by the College of Physicians) costs the Apothecary. Yet the *conscientious* purchaser of this stuff sells it, unblushingly, for saffron, and uses it in every medical composition of which saffron is directed to form a part. Cochineal, an expensive drug, has a cheap substitute, called *Silvester*, at one-fourth the price of the genuine article, with which it is generally mixed in the retail shops, in equal, or various proportions.

The Author is aware, that the presence or absence of these ingredients is not of extreme importance in the efficacy of the compound; but this is not the concern of the Chemist: *he*, unhappily, has an equal temptation to deceive in the manipulation of other and more important medicines; all being considered mere articles of commerce, *he* is too far removed from the operation of such moral causes as nearly interest the feelings of the Apothecary, or Medical Attendant (see page 41) to be much, if at all, influenced by them. Are not the Censors of the College of Physicians aware of these things?*

It is not presumed, nor is it wished to be insinuated that wholesale Druggists are more exhorbitant in their expectations of profit than other traders: their Medicines, indeed, are generally sold for less than the Apothecary pays for them at the Hall: perhaps, a fair average would be to estimate them at *one-fourth less*; but this difference of price should never be suffered to interfere with the manner of their preperation.

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* The powder of carraway-seed, aniseed, and other seeds and roots employed for that noble and useful animal the horse, are notoriously fabricated from a certain quantity of the genuine articles, and a large proportion of any thing else, which is tasteless, coloured and mixed to make up the saleable commodity, usually passed from the wholesale to the retail Chemist and Druggist at a lower price than the respective seeds and roots! Such medicines, and many others, (like the Jew's razors, described by Peter Pindar) *are made to sell.* These assertions are easily proved: can it be doubted, then, but that men thus familiarised with adulteration and augmenting their profits by fraud, will always pause to inquire, whether the compound be for a quadruped, or a biped?

How often is the able Physician disappointed in the expected influence of his remedies prescribed? How much of protracted suffering is daily and hourly caused by the inefficacy of defective Medicines? The Author is persuaded, that every respectable man engaged in the trade of wholesale Chemist and Druggist would be happy to find his customers willing to pay an increased price for many articles, upon condition of a proportionate improvement of their qualities: the principal inducement to sophisticate, or dilute them, would then cease to exist.

CHAPTER VII.

ON THE MEDICAL PROFESSION IN SCOTLAND, IRELAND, AND ON THE CONTINENT OF EUROPE.

THE opportunities of making Anatomical researches, of obtaining Medical and Surgical information, are, certainly, more limited in Edinburgh, than in London; but, the excellent and steady principles, which, in general, regulate the Scottish institutions, are eminently conspicuous in the medical profession, and have enabled its professors to take and to maintain high ground, as teachers in every department of medical science. In that country, there are Physicians, Surgeons, and Druggists. The Physicians, like gentlemen of the same class in England, prescribe for internal complaints only. The Surgeons, all of whom have also studied the practice of physic, *and passed an examination to prove their knowledge in it*, combine pharmacy with surgery, and are, literally, Surgeon-Apothecaries; the Medicine is prepared at home under their own inspection, and they are the general practitioners in the metropolis, and every other part of Scotland, referring to the Physician, and consulting with him, in cases of doubt, difficulty, or imminent danger. When it is remembered that John Bell, Benjamin Bell, Wood, Russell, John Thomson, and other men of a celebrity and ability equal to any Hospital-Surgeons in Europe, are also in the daily practice of Pharmacy; the wisdom of that institution, which enables and encourages such men to be so extensively useful, is too obvious to require comment.*

The *mere* Apothecary is unknown in Edinburgh as a prescriber; and, as the Surgeon is a general practitioner, is a well-informed man, of easy access, and reasonable in his expectations of payment, the people have no interest in seeking the precarious assistance of irregular or unqualified persons: besides, the laws of Scotland are too jealous of the rights of individuals, to permit unjust innovation, and too vigilant to suffer the public to be deluded by the bold pretensions of empirics.

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* The Royal College of Surgeons in Edinburgh, have lately published the regulations to be observed by candidates, previously to their being examined for diplomas in Surgery.—See *The Edinburgh Medical and Surgical Journal*, for October 1813.—The course of study recommended, consists of " Lectures on ANATOMY, CHE-" MISTRY, INSTITUTIONS, or THEORY OF MEDICINE, PRAC-" TICE OF MEDICINE, PRINCIPLES AND PRACTICE OF SUR-" GERY, CLINICAL SURGERY, MIDWIFERY, MATERIA " MEDICA," and, at least, a year's attendance at a public hospital. This is the exact routine of sciences followed by the students in London, but *there is no Tribunal yet established* to examine them in the *Practice of Medicine* and *Midwifery ;* and the Laws concerning *Pharmacy* (see the Act of James I. A.D. 1616) are not enforced. The lawless liberty, therefore, granted to every pretender and empiric in England, who may choose to call himself a Surgeon or Apothecary, has produced incalculable private injury and public mischief, which are now in full operation, *and will, assuredly, continue to be so,* until the avenues to honourable distinction are guarded by insisting upon an education and after-examination in *every department of medical practice.* Connivance at fraud is an indirect encouragement of it.

The Druggist keeps a Laboratory, or store, for the supply of the Surgeon.

In Ireland, the profession consists of Physicians, Surgeons, and Apothecaries. The Chemist and Druggist is a store-keeper only, and, by a law made in the year 1791, he is prohibited from compounding medicines. This is the *exclusive* privilege of the Apothecaries.

The University of Dublin confers degrees of Doctor in Medicine in a manner similar to that followed in Oxford and Cambridge. The Irish College of Physicians has Fellows and other officers, and dispenses authority of practice to Licentiates. It was formerly without a proper medical school, but the laudable anxiety of Sir Patrick Dunn for the honour of his country, and the improvement of its medical establishment, induced him to found three Professorships.

The Physicians confine themselves to their own department, and receive high fees, as in England: they are men of equal professional ability, and deservedly esteemed the superior practitioners.

The Surgeons *are restricted to surgery only*, and interdicted from the practice of Pharmacy, under the penalty of the forfeiture of their rights: this causes much distress to individuals, who cannot, in all places, find sufficient occupation to maintain themselves by the exercise of their skill, and it has given rise to the *occasional* interference of Apothecaries; for, at least, nine of every ten cases requiring professional aid in town and country, are strictly medical, and in many provincial situations, and in all thinly populated districts, a *mere* Surgeon cannot find sufficient employment: besides, the commonalty, in that, as in every other country, manifest a decided preference to the general practitioner; they wish to refer to one only on the account of their infirmities, or diseases; and, where the Student in Anatomy, and Member of the College of Surgeons, is prohibited, by the operation of any law, from adding Pharmacy to his practice, it will be found that the Apothecary is solicited, and, as in Ireland, *compelled*, on many occasions, to unite Surgery with his own particular department, or often suffer his patients to languish without help. The existence of such a law, then, has been, and in Ireland continues to be, productive of this result. The Surgeon, a man of science and general knowledge, is prevented from becoming more extensively useful, and, of course, discouraged.

The Apothecaries in Ireland are incorporated by an Act of Parliament, and in the year 1791, a new Act was made, to render the profession of Apothecary more generally respectable. Its provisions were judiciously extended to insist upon a regular apprenticeship, and an after-examination, before permission can be obtained to practise; that no Apothecary shall keep an assistant for purposes of business, *who has not served an apprenticeship, and received a certificate of qualification for his duties* *from a Court of Examiners:* it also enacts, that a Hall shall be established by subscription of the Apothecaries, who are limited to sixty, at £100 each, to raise a fund for the supply of genuine drugs, and other medicines. A Master and Governors to be annually appointed, and other regulations for the management of affairs.*

The Apothecary is the prescriber and compounder of his medicines; for the Druggist is prohibited from dispensing, and is, like the Druggist in Scotland, a store-keeper for the Apothecary, who, besides the knowledge of Pharmacy, has gone through a course of studies in Anatomy, &c. to enable him to prescribe with advantage; and although not so called, he is, virtually, a Surgeon-Apothecary and general practitioner: the influence of that law, therefore, which prohibits Surgeons in Ireland, from practising Pharmacy, is peculiarly detrimental to *their* interests; and, it is presumed, *by limiting the services of a body of educated men*, that it must often become prejudicial to the public.

The medical profession on the Continent of Europe, is practised by Physicians, Surgeons, and Apothecaries: its progression has been much retarded, and it is far behind, in a comparison with its present state in this Country: for the general members are neither equal in attainments, nor public estimation to their contemporaries in England, Scotland, or Ireland. The Author does not wish to disparage the moral faculties of his professional brethren; but, in countries of less general prosperity, less individual opulence, and less equitable laws, men are not encouraged and rewarded as in England; their exertions are, consequently, more limited, and a proportionate retardation of science is the certain consequence.

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* On the 1st of February, 1804, a scale of charges for attendance was agreed to at Apothecaries' Hall, Dublin, which is the standard for the practice of the Apothecaries in Ireland. The price of every medicine and composition is stated: the amount to be charged by the Apothecary for his personal attendance, or that of his assistant, is distinctly mentioned.

In France, Holland, Germany, and Italy, the Physicians of a superior class, estimated by their talent, have never been numerous: they are, generally speaking, public Professors in Universities, or residents in a few cities or large towns on the Continent. The names of Boerhaave, Albinus, Van Swieten, Haller, Lieutand, Hoffman, De Haen, Stoll, Corvisart, Coray, Cabanis, and others, may be justly appreciated; and, for professional attainments and public estimation, placed on a par with the Fellows and Licentiates of the British Colleges.

The routine, or general Physician in these countries, is in no respect superior to the educated prescribing Apothecary of England, and, in many points, inferior to the Surgeon-Apothecary: his rate of charge for advice, as established by law, is so low as to permit all persons to avail themselves of his assistance, and he directs the Surgeon in the performance of his duty: he must be, therefore, *acquainted with* the principles of Surgery, the practice of which, particularly in provincial situations, is considered a very inferior occupation.

The general practitioner of Surgery in Holland, Germany, Italy, and the greater part of Europe, is still a Barber. It cannot be expected, nor will it ever happen, that, whilst men are employed in menial offices, and obliged to depend on the daily performance of them for a great part of their subsistence, the mind will possess sufficient energy to devote itself very successfully to objects of science: the routine Surgeon, therefore, is a mere mechanical appendage of the Physician in these countries, and the established ratio of payment is *half the fee of the Physician*, who is the general prescriber. It is admitted, that there have been, and now are, Surgeons of eminent learning and distinguished talent in these countries; but they are not numerous, and are either Professors in Universities and large towns, or Hospital-Surgeons. The names of Ruysch and Camper in Holland; of Dionis, Le Dran, Louis, Sabatier, Scarpa, Boyer, and Richerand, in France; of Brambilla and Plenck at Vienna; of Heister, Callissen, and others, in different parts of the Continent, demand the most respectful remembrance: such men are ranked with Hospital-Surgeons and Professors of Anatomy in the British empire.*

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* The Author has had an opportunity, within the present month, of confirming his previous knowledge on this subject, by conversation with a young German Physician, lately from Frankfort on the Mayne, last from Edinburgh, who has been highly educated for a Professor of Medicine and Surgery, and has the diplomas both of

The Apothecary is a trader, who does not visit the patient, unless to administer an enema; in fact, he keeps what in England is called a Chemist's and Druggist's shop: these shops being licensed by their respective governments, are few, if not limited in number, bearing a proportion to the population of cities and towns. The abundance of drugs and herbs employed in the operose pharmacy of the Continent, which still retains much of the old Galenical system, renders it a trade requiring more capital and manual labour than are requisite in the business of the prescribing Apothecary, or Practitioner of Pharmacy in England.*

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a Physician and a Surgeon: he affirms, that, in the large town of Frankfort, there are above forty Physicians, and a proportionate number of *routine* Surgeons, *not one of whom is trusted to perform amputation, or any of the great operations.* On these occasions, a Professor of Surgery comes from the College at Mayence, a distance of twenty miles, uses the knife, applies the first bandage, and returns home, leaving the management of the case to the routine Surgeon; and he observed, that this defect had induced his father, a Physician at Frankfort, to have him well instructed in Surgery, and fully qualified to supersede the necessity of sending to Mayence. It appears, then, that there is no law in that country to prevent an union of the practice of Medicine and Surgery in the same individual, if he shall have given proofs of possessing the requisite talents.

* See *Elements de Pharmacie, par M. Baumé*, which contains the French Pharmacopœia, &c.; a book in general use, like Dr. Duncan's *Edinburgh Dispensatory*, or a similar, but improved work, lately edited by Mr. A. T. Thomson, Surgeon, called *The London Dispensatory*, which is a compilation of great merit, and exhibits the Author as a scientific Chemist, Botanist, and a man of extensive general information.

CHAPTER VIII.

ON REMUNERATION.

A COMPARATIVE view of the relative situation, of the qualifications and employments of men in the various departments of the medical profession, involves the question of Remuneration, or the fair and equitable reward of services. The Author could not pass over this interesting point, without making a few remarks, explanatory of the real situation of the Apothecary, Surgeon-Apothecary, or general medical attendant; but, he will never cease to impress on the minds of his professional brethren, the Surgeon-Apothecaries, the necessity of moderation in their expectations of payment: *their* duties must be performed with alacrity at a reasonable charge, and upon the principles explained in the medical character (page 29) or they will not be deserving of encouragement, or public confidence: he is convinced, that, to be really useful to community, they must be of easy access, or the public will be compelled to resort to uneducated and unqualified persons for advice, from the same causes which first induced them to implore the aid of the Apothecary. (See Chapter III.)

The Author is fully aware of the difficulty of adapting the measure of professional reward to the individual ability of the patients; yet, it must be admitted, that the general and duly qualified Practitioner has an unquestionable right to expect, that the industrious and full employment of his time and exercise of talent shall yield, in some way, a reward sufficient to enable him to maintain a family in comfort and respectability, suitable to the station assigned to him in society. In the Bill presented in the House of Commons last session, but withdrawn for revision and more ample consideration, this subject, and some clauses concerning Druggists, were included; but, in that which is about to be offered for discussion in Parliament, these points are passed over. The Committee, and the Profession at large, are more anxious to possess an honourable distinction in society by the respectable attainments of its members in every department of knowledge connected with Medicine and Surgery, and by the establishment of a proper tribunal, legally authorised to *compel* every future candidate to give proofs of having studied with success, than to incur the suspicion of being actuated by mercenary motives, and objects of mere trading emolument. They are persuaded that, when all the avenues to the honourable distinctions of professional life shall have been secured to the meritorious alone, the Surgeon-Apothecary will be more universally esteemed, his services duly appreciated and rewarded, and, in the interval, every educated member must continue to distinguish himself by the fair and punctilious discharge of his professional duties, and trust to the discernment of his patients, to their liberality and feelings of common justice, to obtain an adequate reward over and above the amount of his bill for medicine, where personal attention has been conspicuously bestowed ; for, in very many cases of indisposition, much medicine is not requisite: in the disorders of infants and children, it is utterly impossible to compound it in such a form as to afford payment, even to a common messenger in going to and from the dwelling of the patient as frequently as the advice of the Apothecary is *required*, his presence *expected*, and his superintendence *necessary* for the removal of the complaint.

It is admitted that the superior classes of society are aware of these things, and *sometimes* present the Apothecary with a *douceur* above the amount of his bill; but their liberality is often circumscribed, and the professional services of those, who make no demand, are liable to be passed over in silence, and the most meritorious part of their exertions and their *equitable claims* consigned to oblivion; besides, it is a lamentable fact, that the most numerous class of society, the Traders, many of whom are in affluent circumstances, and amongst whom the Surgeon-Apothecary, or general Practitioner, is chiefly employed, never think of paying for any thing which does not form *an item of charge in a bill;* and this circumstance obtrudes itself more particularly upon the notice of Apothecaries, because *their* business has not only sustained a deterioration by the increase of dispensing Chemists, but it has also suffered a diminution in emolument from a cause which ought to have produced a contrary effect; namely, the improvement of professional qualifications, and the acknowledged ability to be more extensively useful. Formerly, the Apothecary might rest satisfied without additional payment on those occasions where little medicine and much attention were required, because it frequently happened (particularly amongst the nobility and opulent gentry, who in all cases *used* to depend upon the advice and superintendence of their Physician alone) that he supplied the medicine, without being expected, or required, to give personal attendance, and this was to him an occasional source of profit, which, in general business, might be fairly balanced against his loss on account of extra-attendance, without medicine; but where is the Apothecary, employed by the nobility and gentry of the present time, whose medical advice and opinions are not appreciated, and whose time is not occupied in visiting them professionally? How many fees are now saved by them in consequence of his partial, or general attendance? He is expected to possess, and he has, usually, obtained, the education of a scholar, and medical talents of no mean order. It is obvious, therefore, that the increased merit of such Apothecaries has, by a perversion of reason, progressively operated to their disadvantage.

One motive of preference to the Chemist's shop may be, that the charge for medicine is sometimes lower than at the regular Apothecary's; but, if so, there are reasons for this difference (see Chap. VI.) besides which, the preparer of Physicians' prescriptions in London, and the Drug-dealing Grocer in the country, are paid ready money for their commodities, and their time is no longer employed than in dispensing them at the counter; but, the Apothecary has annual accounts with his patients, and singularly fortunate, indeed, is he, who obtains a settlement of them all at the end of the year; *he* is liable to make bad debts, and that liability amounts to a certainty, of greater or less extent, to every practitioner: *his* time is occupied in visiting patients (often obliged to incur a considerable expenditure for horses and a carriage) and to do so with advantage *to them*, he must have gone through a long and expensive education; these facts, surely, deserve attentive and serious consideration. "The labourer is worthy of his hire," and, if the general usage has hitherto been to remunerate the Apothecary for time and talent, by permitting a charge over and above the market price of his drugs: it must be admitted, that such remuneration has been deservedly obtained, or, that some reward ought to be given for *professional* services. The prescribing Apothecary is an artist, and should be so considered; his talent is the result of diligent application to particular studies; his time is often his only estate, and what artist is paid only for the materials he consumes? Does the miniature-painter receive no more than the intrinsic value of his ivory and colours, or is the Solicitor paid six shillings and eight-pence for a letter, as the price of ink and paper? Certainly not. The art of laying on the colours, and the knowledge requisite to dictate the letter, are the real objects of remuneration. Why then should not the educated Apothecary be entitled to an adequate reward for the occupation of his time, and exercise of his medical talents, *whenever they are demanded by his patients?**

A plan could be easily devised, by which the patient might be supplied by the Apothecary, at the very lowest charge of the medicine, when his professional or personal attention are not required. The subject admits of much dilation, foreign to the object of this Work, which is more particularly designed to take a candid and liberal view of the profession, *as a Science:* it had not, however, escaped the discriminating eye of that acute philosopher, Dr. Adam Smith, who says, " The profit " of Apothecaries has become a bye-word, denot- " ing something uncommonly extravagant: this " great apparent profit, however, is frequently no " more than the reasonable wages of labour. " The skill of an Apothecary is a much nicer " and more delicate matter than that of any arti- " ficer whatever, and the trust, which is reposed " in him, is of much greater importance: his re- " ward, therefore, ought to be suitable to his " skill and his trust, and it arises generally from " the prices at which he sells his drugs. Though " he should sell them, therefore, at three or four " hundred, or even at a thousand per cent. profit, " this may be no more than the reasonable wages " of his labour, charged in the only way in which " he can charge them, upon the price of his " drugs. The greater part of the apparent profit " is real wages, disguised in the garb of profit."

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* It was a favourite theme of the early Dramatists, to represent the *Apothecary* as a creature of mere quaint garrulity and pragmatic folly. The facetious MOLIERE carried this raillery to the highest pitch, and, at the period when he wrote (from 130 to 150 years ago) there might have been something in France about these people, extremely ridiculous, which required the aid of satire to correct. The translators and arrangers of his plays and farces for the English stage, in copying that which was, perhaps, *character*, without a sufficient regard to the difference of time and place, have frequently made it, really, *caricature:* besides, the Wits of all ages and countries are often more studious to elicit mirth, than anxious to consult their better judgment in pourtraying truth. How can we, otherwise, account for the appearance of such personages as Lenitive and Dr. Ollapod, in two of our most popular pieces? The Author is convinced, that the Apothecary of the Metropolis and provincial districts, of the present day, is a man of professional ability and discretion; and he is persuaded, that, when he has availed himself of the opportunities of instruction, explained in the second Chapter, few persons will hesitate to declare, that he ought to be recognised as a *legal agent* for the cure of internal diseases.

CHAPTER IX.

ON THE CONDUCT OF THE ROYAL COLLEGE OF PHYSICIANS.—OF THE COURT OF ASSISTANTS OF THE ROYAL COLLEGE OF SURGEONS, AND OF THE SOCIETY OF APOTHECARIES, TOWARDS THE PRESENT ASSOCIATION OF APOTHECARIES, AND SURGEON-APOTHECARIES, OF ENGLAND AND WALES.

SUPREME power must be lodged somewhere, or no government, no society can exist in the secure enjoyment of their natural, or acquired rights. It is known that the members of every chartered body are zealous in maintaining their estimation, and it was expected that those, to whom the Legislature of the country had consigned the care of public health would not be less jealous of their privileges: but it was not foreseen, that a body of educated men would for these purposes, avail themselves of any means, except those, which would bear the test of the most rigid scrutiny, and which could be traced to proceed from motives of that enlarged philanthropy which should ever distinguish superior minds.

The Author would willingly forget all that is past relative to the conduct of the College of Physicians (see the Introduction) because he presumes that an erroneous opinion of the views and intention of the Associated Surgeon-Apothecaries might have been formed; but, the reiterated endeavours of the Committee to explain the motives of their proceedings, and the appeal to them for advice and assistance (not pecuniary) in the following letter, must enable the country to judge, whether opposition, or even non-concurrence, under such circumstances, be dignified and honourable, or invidious and disgraceful, to those, whom the bounty and wisdom of former Kings and Parliaments invested with *a discretionary power to improve the state of the medical profession, and to protect the public from the officious and dangerous interference of unqualified persons.*

" *To the Royal* COLLEGE *of* PHYSICIANS *of* LON-
" DON, *the* MEMORIAL *of the* APOTHECARIES *and*
" SURGEON - APOTHECARIES *of* ENGLAND *and*
" WALES.

" THE Committee appointed by a General Meet-" ing of the Apothecaries and Surgeon-Apothe-" caries of England and Wales, held at the Crown " and Anchor Tavern, on Friday the 20th of " November, 1812, for carrying into effect certain " Resolutions then adopted, again appeal to the " Royal College of Physicians, with all the re-" spect to which it is justly entitled, as the recog-" nized head of the Medical Profession.

" The Committee have seen, with deep concern, " the Petition of the Royal College presented to " the House of Commons against the Bill for regu-" lating the Profession and Practice of the Apo-" thecary and Surgeon-Apothecary in England " and Wales, which was lately withdrawn from " that honourable House for farther consideration.

" Although they are ignorant of the motives and " feelings of the Royal College, which suggested " that Petition, yet they conceive it never would " have been framed or presented, if the College " had condescended to inquire into the real motives which actuated the Memorialists in drawing up their Bill, and the views which they contemplated in obtaining for it the sanction of the " Legislature.

" They have to inform the Royal College, that " another Bill will be introduced into Parliament, " divested of what has been supposed to be objectionable matter.

" The Committee, in soliciting the attention of " the Royal College to the claims of the Apothecaries and Surgeon-Apothecaries, disavow even " the shadow of a wish to interfere with, or encroach in any manner on the privileges, or immunities of the Royal College as a body, or " on the practice of its individual Members as " Physicians.

" Their great object is to improve the education, " and render more respectable their own Body; " and to advance the public good, by fencing their " branch of the Profession from the intrusion of " ignorant pretenders and empirics, to whom it is " now unfortunately open. They desire, most " sincerely, not only to have the support and countenance of the Royal College in their application to Parliament, but its parental advice in " framing their Bill.

" The Committee consider it to be their duty to " state, that they are acting with the general con- " currence of Apothecaries and Surgeon-Apothe- " caries throughout England and Wales: but they " indulge the expectation that the Royal College " will take such means as may seem to it proper, " for ascertaining the real sentiments and views of " the Apothecaries and Surgeon-Apothecaries; " and, in answer to this Memorial, make known to " the Committee the measures which it intends to " adopt.

"They rest assured, that, when the intentions of " the Apothecaries are fully understood, the Col- " lege will no longer withhold its approbation from " the Bill; but, by its powerful co-operation, assist " in securing a great and important public benefit.

" Signed, by order of the Committee,

" W. T. WARD,

" SECRETARY.

" *Committee Room,*
" *Crown and Anchor,*
" *June* 14, 1813."

To this respectful solicitation the following answer has been received:

" *Royal College of Physicians,*
" *June 26th,* 1813.

" SIR,

" I HAVE to inform you that the President " communicated to the College, assembled this day,

" the Memorial of the Apothecaries and Surgeon-
" Apothecaries of England and Wales; and the
" College are of opinion, that they cannot give any
" advice or assistance to them on this occasion.

" By order of the College,
" JAMES HERVEY,
" REGISTRAR.

" W. WARD, Esq. Secretary
" to the Committee of Apothecaries and Surgeon-
" Apothecaries, &c."

Far be it from the Author's intention, or wish, to derogate from the respectability of the Physician, or to deny his claim to superior distinction and greater reward than the educated *prescribing* Apothecary; he disclaims such motives, and has the greatest respect for the College-establishment, many of whose members he knows to be men of extensive learning, and of the highest professional ability: yet, as it is well understood, that neither classical nor medical learning are the exclusive attributes of Members of the Royal College of Physicians, but that these qualifications are largely possessed by Gentlemen, who exercise a subordinate department, he would recommend them to consult their own feelings on the subject of discussion, *individually*, as men of honour and integrity, this would induce them, *collectively*, to meet the question in that spirit of amity which ought to unite the whole Profession by a bond of friendship;

to recollect, that it has always been *unequivocally* stated by the Committee, and that it is still their desire, not to trespass upon nor to interfere with *their* privileges, and to remember the injunction, "*Ne fac alteri, quod non vis tibi fieri.*" They should foresee, that a contrary and hostile line of conduct, by attempting to enforce laws, which, however equitable two or three centuries ago, might be *now* found either *partial*, or, *defective*, and no longer adequate to fulfil their original intentions, may involve them in a serious national dispute; and, that the same Regal and Parliamentary authority, which enacted those laws, could modify, or abrogate them, whenever their operation may cease to be beneficial to the public.

At the commencement of the present Association of Surgeon-Apothecaries for the attainment of objects mentioned in the Introduction, the Committee addressed a respectful letter to the Court of Assistants, or ruling members of the Royal College of Surgeons, of a purport similar to that sent to the Royal College of Physicians, but they were not fortunate enough to receive a satisfactory answer: it was a formal reply, concluding with these words; that, "*The Court of Assistants does not intend* "*to interfere with the subject of such Letter.*" The Committee might lament this decision, because three-fourths, at least, of the whole number of the Members of the College, in actual practice, both in London and provincial districts, had associated themselves for the purposes specified. The Chairman and majority of the Committee were Surgeons; but, what must have been their astonishment at finding, that, on the eve of presenting their Bill for the *consideration* of Parliament, the Court of Assistants became actively hostile to its promotion. They called a meeting, not of all the Members of the College, to judge of the expediency of the proposed improvements, and to collect the general sense of their body; but of the Court of Assistants *only*, and decided upon opposing the Bill with all their might; and those Members of the Court, who were not present, received a letter from the Secretary of the College, by order of that meeting, *requesting them to use their personal influence with Members of Parliament for such purpose*, without stating any reasons, for which the opposition was necessary or just: and one of the Court, whose respectability as a Surgeon, and estimation as a Philosopher, should have enlarged his mind, and rendered it superior to the practice of little arts, unworthy of his high reputation and incompatible with true greatness, made himself conspicuously eminent in the *honourable* task of insidiously opposing his professional brethren in the promotion of a measure, which the *majority of them* considered absolutely necessary for their prosperity as general Practitioners; a plan which would have been open to fair and manly discussion in Parliament, and subject to modifications in a Committee of that House.

It has been supposed and intimated by some

Apothecaries, that the Physicians and Hospital-Surgeons wish entirely to supersede the necessity of their occupation, by sending their prescriptions to the Chemist's shop, and reserving to themselves the *total* management, instead of the superintendence, of their patients; and, it is true, that a few of them are more than suspected of endeavouring to multiply the frequency of their expensive visits, to make a trade of their profession, and, under cover of a false plea of the medicines being better, or more accurately compounded, or prepared in a peculiar manner, at some particular shop, that they do, occasionally, succeed in keeping away the Apothecary: but, these are, generally, men whose talents are so little, if at all, superior to those of the educated Surgeon-Apothecary, that the real motives of such conduct may be found to be more *personally* interested, and, by substituting craft for wisdom, often, to arise from a fear that the patient may, perchance, exercise his own judgment, and make a comparison, not to their advantage. The Author can safely assert, that he has never known Physicians and Surgeons of the first-rate talent resort to this practice, (although some have done so, who are in considerable estimation:) These gentlemen retain the confidence of their patients, by a more secure and honourable tenure; their eminent and conspicuous ability: they are deservedly paid at a high rate, and are, moreover, usually the most ready to lessen the weight of *requisite* attendance, by a liberal consideration of the situation of their patients, when not in affluent circumstances.

To remove the evils, and to obviate the influence, of the sinister practices alluded to, the Author takes this opportunity of recommending to his professional brethren a most efficacious and certain remedy, which will, assuredly, contribute both to their honour and their profit: it may give some of them a little more trouble, perhaps; but, if they shrink from the task, they are not worthy of the reward, and their complaints will be unpitied. He does not advise them to oppose craft by fraud, in making the most, in *their* turn, of those patients, who have strayed, when they shall revert to their care, which they always do, at one time or another; but, to counteract *Cunning* by *Wisdom*, which, under judicious management, is always an over-match for it; by acquiring as much scientific and professional information as possible, by treating their doubting patients with honourable candour, and, on every occasion, by endeavouring to moderate the expenses of indisposition, and acting, uniformly, upon the principles of the true medical character. This conduct is soon distinguished, and generally meets with its reward: besides, those who had run to the Chemist's shop, to save a few shillings, would, *from similar motives*, have as great a regard for their Guineas, and could not fail in resorting to the Surgeon-Apothecary. The Competition, upon these conditions, would not improve the practice of such Physicians and Hospital-Surgeons as have begun, or may hereafter presume, to act upon a system of fraudulent illiberality. The most numerous classes of people must, ever, be under the care of the general Practitioner, for reasons mentioned in Chapters II. and III. and, very many of those who can afford to pay more, and, who do usually remunerate with variable liberality, will not disdain to regulate their health by the advice of studious and experienced men, obtainable at an easy rate, when they entertain a favourable opinion of their ability, notwithstanding the operation of *partial* or *obsolete* laws may have prevented, and may continue to prevent, those, who have received their medical education in the best school for practical instruction, LONDON, from being dignified by the highest titular honours.

To convince the Court of Assistants of the continued anxiety of the Associated Surgeon Apothecaries to avoid giving any reasonable cause of offence, the following letter was addressed to them on the 7th of July, to which no Answer has yet been received, after an elapse of three months:—

Copy of an ADDRESS *to the* MASTER, GOVERNORS, *and* COURT *of* ASSISTANTS *of the* ROYAL COLLEGE *of* SURGEONS *of* LONDON.

"GENTLEMEN,

"THE Committee appointed by a General Meet-
"ing of the Apothecaries and Surgeon-Apothe-
"caries of England and Wales, held at the Crown
"and Anchor Tavern, on Friday the 20th of No-

" vember, 1812, for carrying into effect certain " Resolutions then adopted, again appeal to the " Court of Assistants of the Royal College of " Surgeons, on the subject which they had the " honour to address to the Court on the 11th of " December, 1812.

" The Committee have seen with great concern " the Petition of the Court presented to the House " of Commons against the Bill for regulating the " Profession and Practice of the Apothecary and " Surgeon-Apothecary, in England and Wales, " which Bill was lately withdrawn from that " Honourable House, for farther consideration.

" Although the Committee are ignorant of the " motives and feelings of the Court which suggested this opposition, yet they conceive it never " would have been exerted, if the Court had previously inquired into the real intentions which " actuated them in drawing up their Bill, and had " requested an explanation of such parts as appeared doubtful or objectionable, and the views " which were contemplated in obtaining for it the " sanction of the Legislature.

" They have to inform the Court that another " Bill will be introduced into Parliament, divested " of what has been supposed objectionable matter.

" In soliciting the attention of the Court to the " claims of the Apothecaries and Surgeon-Apothecaries, the Committee disavow even the shadow of a wish to interfere with, or incroach in " any manner on, the privileges or immunities of

" the Royal College of Surgeons, as a body, or on
" the practice of its individual Members, as Surgeons.

" Their great object is to improve the education, and render more respectable their own Body, and to advance the public good, by fencing their branch of the Profession from the intrusion of ignorant pretenders and empirics, to whom it is now, unfortunately, open.

" They desire most sincerely to have the aid and countenance of the Court in their future application to Parliament.

" The Committee will be happy to afford any information which the Court may require, to enable them to ascertain the sentiments and views of the Apothecaries and Surgeon-Apothecaries of England and Wales, with the declared approbation of whom they consider it their duty to state they are almost universally supported.

" Signed, by order of the Committee,
" W. WARD,
" SECRETARY.

" *Committee Room,*
" *Crown and Anchor Tavern,*
" *July* 7, 1813."

The Author, a member of this College, who received a testimony of its approbation ten years ago, on account of his translation of an octavo volume on Physiology, avails himself of this opportunity to express his sincere regret, that its present governing members should have been so averse from communication with the Committee of Surgeon-Apothecaries, and so precipitate, so *caustic* in their opposition: he has the highest respect for the College and its laws: but, as these invest Gentlemen of the Court of Asisstants with an almost unlimited rule, and a power of self-nomination to *all the Offices of Direction*, it behoves them to act with extreme caution, to make a temperate and judicious use of that power for the expressed or implied purposes of its enactment—*The general improvement of their department of the profession, and the benefit of the public.* It would be a painful task for him to be obliged again to animadvert with more severity upon the conduct of the governing members of a body, to which he has the honour to belong; and he trusts, that, on all future occasions, there will exist an unanimity of sentiment, within and without the precincts of the Royal College of Surgeons, leading to a zealous co-operation for the attainment of every object, which may have a direct tendency to confirm the reputation, and augment the respectability of all its members, by a more rigid exclusion of those, who are unqualified for their assumed task. Such motives and actions would be worthy of the Court of Assistants, as men of candour and liberality; by consulting their better feelings, and acting with liberality, they would confer dignity on the Profession, and render it more extensively useful to the community.

Can it be doubted, that there exists a necessity of enforcing a preliminary education, and a strict examination, of every future practitioner in town and country? At present, no Surgeon is examined as to his knowledge of the principles and practice of Midwifery, and every pretender is permitted to assume the name, and attempt to exercise the other duties of a Surgeon, with impunity. Surely this apathy for the sufferings of the public, and the neglect in not protecting their own members from the effects of these assumptions, demand the most unqualified censure.

The Master, Wardens, and Court of Assistants, of the Society of Apothecaries in London, were respectfully addressed, at the commencement of the Association of Surgeon-Apothecaries for the purposes specified, in a letter from the Committee, and they declared, after consulting with the Royal College of Physicians, that they could not, *as a body*, concur with the Committee in the intended application to Parliament. This was to be regretted, when *three-fourths* of that body were actually amongst the Petitioners: but as they did not become actively hostile to the measure, and seem to have followed the dictates of the governing Members of the Royal College of Physicians, at whose recommendation their charter was first granted (see Chapter II.) their answer may be suffered to pass without severe comments: yet, it is to be lamented that the ruling members of any chartered body, instituted for public good, should not be awake to their duties and to the protection of the rights of its members from lawless and unreasonable innovation. The affairs of this Society, or Company, have long been more commercial than professional. They sell genuine drugs and medicinal preparations to their Members and other Practitioners, who prefer paying a higher price for their remedies, on which they may rely in the cure of diseases, than obtaining them from more questionable sources, at a cheaper rate.

The Committee of Surgeon-Apothecaries, to prove their earnest endeavours to conciliate, and if possible, to rouse them to a true sense of their situation, have since addressed the following letter, to which they have not *yet* received any reply.

" *To the* MASTER, WARDENS, *and* COURT *of* ASSISTANTS *of the* SOCIETY *of* APOTHECARIES.

" THE Committee, elected by the Apothecaries " and Surgeon-Apothecaries of England and Wales, " have the honour to communicate to the Court of " Assistants, that the Bill ' for regulating the " Practice, &c. &c.' was presented, and read to " the Honourable the House of Commons, on the " 8th of March, which being opposed by Petitions " from the Royal College of Physicians and Sur- " geons, and meeting with other obstacles, was by " the Committee withdrawn for amendment, that

" it might be again introduced the next Session " of Parliament, in a form less exceptionable.

" The Committee have recently renewed their " applications to both the Royal Colleges, for their " concurrence and aid in the arrangement of an- " other Bill. Copies of those applications, and the " answer of the College of Physicians (the only " one yet received) are enclosed, for the informa- " tion of the Court.

" With the approbation and support of the " greater part of the Practitioners in Pharmacy " throughout England and Wales, and of the Mem- " bers of your Society, the Committee respect- " fully, but confidently, recommend to the most " serious attention of the Court, the present de- " teriorated state of the business of the Apothecary, " both in the Metropolis and in the country. They " are satisfied, that your Court must be sensible of " the absolute necessity which exists for the inter- " ference of Parliament, to protect the public " health, and their branch of the Medical Profes- " sion from the farther intrusion of uneducated " and ignorant pretenders: a principal and in- " creasing source of much mischief.

" In execution of the duty confided to their " charge, the Committee are desirous of arranging " a Bill, to meet, as fully as possible, the alleged " evils; and to guard, in future, the regular Prac- " titioner in the free and liberal exercise of his " various and important functions. To insure

" so desirable an object, they again most earnest-
" ly solicit the co-operation of the Court of Assist-
" ants, feeling assured, that, by their joint en-
" deavours, such a plan might be formed, as would
" prove highly beneficial to the public, and ac-
" ceptable to the different branches of the Medi-
" cal Profession.

" Signed, by order of the Committee,

" W. WARD,

" SECRETARY.

" *Committee Room,*
" *Crown and Anchor,*
" *August* 5, 1812."

CHAPTER X.

RESOLUTIONS PROPOSED BY THE LONDON COMMITTEE OF SURGEON-APOTHECARIES, AS THE BASIS OF A NEW BILL.—RECAPITULATION AND CONCLUSION.

IF it be admitted, that all persons should be instructed in the principles of the avocation they follow, it must be conceded, it cannot be denied, that those, to whom the public confide their most valued possession, life, ought to have, previously, given proofs of ability to perform their assumed duties. The Committee of Surgeon-Apothecaries, therefore, although unsupported by the protection, advice, or assistance of those chartered bodies, whose concurrence might have been, not unreasonably, expected, were too strongly impressed with the justice of their cause, and the moderation of their wishes, to permit any obstacle of that kind to prevent them from pressing the question upon the consideration of Parliament, with a determination, which no opposition, founded on a system of illiberality, will ever induce them to reverse, and with a vigour which no motives of timidity will dispose them to relax. The following Resolutions are proposed as the bases of the new Bill, and submitted to the District Committees in every part of England and Wales.

The Resolutions proposed by the London Committee as the Bases of a New Bill.

" 1st. That it shall not, in future, be lawful for " any person, except those already in practice, to " act as an Apothecary, Surgeon-Apothecary, or as " a Practitioner in Midwifery, in any part of England or Wales, unless such person shall have " been first examined, and received a certificate of " his being duly qualified for such practice. Provided always, that no person shall be entitled " to such examination until he has attained the age " of twenty-one years.

" 2d. That no person, excepting such as are " actually indented, or have commenced a Course " of Medical Studies, at the time of passing this " Act, be admitted to an examination for a certificate " to practise as an Apothecary, or Surgeon-Apothecary, unless he has served an apprenticeship of " not less than five years to an Apothecary, or Surgeon-Apothecary, and shall produce other testimonials of a sufficient Medical Education.

" 3d. That no person be permitted to practise " as an Apothecary, either alone or conjointly as a " Surgeon-Apothecary, unless he has been examined as to his knowledge of Medicine and " Pharmacy, by a Board of Medical Practitioners, " properly qualified, and legally authorized for that " purpose, and likewise for the purposes of Examinations in Midwifery.

"4th. That no person acting, or having acted "as full Surgeon or Apothecary in the Army or "Navy, shall be liable to an examination, except "as to his qualification in Midwifery.

"5th. That no person, in future, shall be allowed "to practise Surgery alone, or conjointly with Pharmacy and Midwifery, until he shall have obtained "a Diploma from the Royal College of Surgeons.

"6th. That no person, in future, act as an Assistant to an Apothecary, or Surgeon-Apothecary, "to compound and dispense Medicine, without "passing an Examination in Pharmacy, unless he "shall have served an Apprenticeship of five years "to an Apothecary, or Surgeon-Apothecary.

"7th. That no Female, in future, be allowed to "practise Midwifery, without passing an Examination.

"8th. That every Apprentice's Indenture shall "bear a stamp of twenty-five pounds.

"9th. That nothing herein contained be considered as preventing Members of the Royal College of Physicians, or of the Royal College of "Surgeons, or of the Society of Apothecaries, of "London, enjoying the same privileges and immunities in their several branches of the Profession, "to which they are present entitled.

(Signed) "GEORGE MAN. BURROWS,
"CHAIRMAN.

"*Bloomsbury-Square*,
"*Sept.* 4, 1813."

The beneficial tendency of these Resolutions, if carried into effect, is too obvious to require comment, when it is remembered, that no tribunal at present exists, to examine practitioners in Midwifery, and that no person practising as an Apothecary, in town or country, is ever questioned *publicly* or *privately*, as to his knowledge of diseases and their remedies: The Physicians having, hitherto, *affected* to disdain recognising them as prescribers, and the Surgeons confining their examination of candidates for diplomas to *mere* Surgery and Anatomy.

It has been seen in the preceding chapters, that medical knowledge was cultivated according to the then existing principles of science, by the early philosophers of Greece, that it assumed an increased importance, and became a distinct profession at the time of Hippocrates, that it continued to be highly valued during the remaining period of Grecian prosperity, and, with other sciences, was afterwards transferred to Rome, that it continued to be studied, and its professors honoured, during the prevalence of Roman greatness, and was only discontinued in common with all the fine arts, during the barbarous anarchy of Europe in the middle or Gothic ages, that it was restored with the revival of literature, and has kept pace with other improvements.

The time of the first enactment of laws for the regulation of the medical profession in England, having been noticed, a compendious account of all the charters, which the Author has perused with attention, is then given, to shew the periods of successive extension of privilege and power granted to the medical bodies, and to elucidate the expressed and implied objects of those grants. A comprehensive view has been taken of the progression of the Nation to its present state of commercial prosperity and general opulence, with the influence of these causes upon the physical powers of its inhabitants, and the effects of them, as far as they regard the medical profession. In this view of the subject, the Author is not conscious that he has been anticipated by any writer; he has endeavoured to establish that which he truly believes to be an indisputable truth, *that the extension of medical aid was, from such causes, rendered absolutely necessary for the welfare of the people;* and, he has pointed out the transition of the Apothecary, from a mere compounder, to a presciber of medicine, in cases of minor importance, and to persons who could not afford to fee a Physician. He has noticed the opportunities which the Apothecary has progressively possessed of becoming fully qualified, in LONDON, to practise, and expressed himself with a warmth of feeling, which may be, perhaps, excusable in one, who is jealous of the honour of his native city; but he has never suffered this, nor any other motive, to diminish his strict regard for correctness.

The general utility of the prescribing Apothecary, and Surgeon-Apothecary, has been explained, upon principles, which, it is presumed, cannot be controverted, and the justice of their appeal to the wisdom of Parliament, elucidated by arguments, which will not be easily refuted, namely, that the educated professional man should be clearly distinguished from the illiterate pretender, encouraged and protected in the honourable exercise of his useful duties; and, that the public should be able, *on all occasions*, to obtain judicious assistance at a moderate expense, with the opportunity of referring to the Physician and Hospital-Surgeon, in cases of doubt, unusual difficulty, or danger: or, at all times, and on every, the most trivial, occasion, if individuals should be in such circumstances as enable them to pay the usual fees; provided it be their pleasure to do so.

The condition of Medical Practitioners in the country, their just cause of complaint on account of the considerable abstraction of their employment by irregular, or unqualified persons (see Chap. V.); the defective medical mangement of of the poor, by the scandalous apathy of their legal guardians, the Overseers; have been elucidated from an extensive correspondence, explanatory of the shameful neglect of many Parish-Doctors.

The laws concerning Drug-dealing Grocers, the multiplication of them in form of Retail Chemists' and Druggists' shops, and some of the abuses of the trade, have been noticed with severe, but just, reprehension, The negligence of those Corporate Bodies, which are invested with a power to search for bad drugs and "potticary wares" have been animadverted upon with less severity than might have been used, and the real, and, *by them*, unexplored sources of the mischief pointed out. The merited preference of the regular Apothecary has been emphatically expressed and referred to principles, which every individual of liberal mind will know how to appreciate.

The actual state of the medical profession in Scotland, Ireland, and the continent of Europe, has been passed under review, to ascertain their comparative merits: the institutions of Scotland are praised from no other motive than a persuasion, or conviction, of their superior usefulness.

The Author, having added a Chapter on Remuneration, and dilated on this subject with a candour and freedom, which, he trusts, are as just as they will be impressive, has left it with an apposite quotation from a late argumentative and discriminating writer of acknowledged respectability.

In describing and commenting on the conduct of the Royal College of Physicians, and *The Court of Assistants* in the Royal College of Surgeons, the Author has had a most painful task: but, having proposed to give a correct view of the Profession in all its departments, to elucidate the merits of the Bill about to be presented for the consideration of Parliament, it became an imperative duty to endeavour to express himself with clearness, precision, and effect.

It is obvious, indeed, that a better regulation of the profession of Apothecary and Surgeon-Apothecary is become indispensably necessary to rescue them from an increasing degradation; and that, if this be not *speedily* adopted, they will sink into disreputable occupations, and their regular members be merged in the general contempt. The means of obtaining the end may possibly admit of a shade of difference in opinion; but will the *governing members* of the Royal College of Physicians, or *The Court of Assistants* in the College of Surgeons, presume to say, that the abuses pointed out, and the defects mentioned, ought any longer to be tolerated? They are, with few exceptions, men of private fortune, abundant practice amongst the opulent, resident in London, and too far removed from the operation of the just causes of complaint to be *personally* affected by them, or, it should seem, *morally* influenced by the privations of their less fortunate brethren. Will they have the temerity openly to oppose men of respectability and character, to whom they have refused advice and assistance in the prosecution of a laudable object? Or, will they endeavour to fritter away the efficacy of the proposed measure, by attempting to obtain the management of it, when the public feeling of its justice and necessity has become too strong to be resisted? Let not these queries be considered irrelevant, nor the allusions too pointed, when it is known, that they have long been indifferent to the effects of abuses and frauds, as numerous and flagrant as those exemplified in Lincolnshire, which are daily practised within the precincts of their Charter, in London and its environs, with impunity.

If the governing members of societies instituted for purposes of general good, and successively invested with powers and privileges, which the respective Monarchs and Parliament confided to them, to be exercised with an honourable discretion, presuming that none but liberal sentiments could actuate them by one common mind, are negligent of their duties; or, if they meet in council to form partial or sinister resolutions, and act upon them, *as a body*, regardless of the most respectful appeals, they must expect to receive the censure due to such conduct, *as a body*, and to sustain a depreciation in public opinion, proportioned to the expressed or implied tendency of their acts.

The Author cannot take leave of the subject without again expressing his sincere wish, that the ruling members of the already chartered medical bodies may review the affair with a feeling of friendly consideration, that they will, *at last*, appreciate the unequivocal frankness of the Committee of Surgeon-Apothecaries in London, meet them in a spirit of amity, and contribute their powerful aid to carry into effect the intentions of the Bill.—*To improve the general respectability of the medical profession, and to defend the public from its numerous abuses.* Resolutions and acts of this kind would reflect honour upon themselves, and could not fail in securing to the community protection and advantage.

In a state of mind the most distant from enmity, and averse from wishing to give just cause of offence to any individual, or corporate body, with a sincere desire to avoid even the suspicion of holding out a defiance; but, with the boldness of a man resting upon the truth of his assertions, the purity of his motives, and convinced of the justice of the cause he attempts to defend, the Author fears no hostility, personal, or professional, on account of any part of the contents of his little volume.

The impartial critic, whether anonymous or declared, who writes as he feels, and feels as he writes, is a most estimable character; he will appreciate motives, and judge of actions, with real candour; and, in expressing his opinions, however dissonant, will ever be entitled to respectful attention; but, the concealed reviewer, who is unmindful of his compact with the public, the mercenary scribbler, who may be hired to misrepresent the most obvious facts, will be treated with merited contempt: to these gentry the character of Sir Hudibras may be justly applied:

> " On either side he would dispute,
> " Confute, change hands, and still confute."*
>
> Canto I.

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* A bookseller of the highest respectability, told the Author, that he was once requested to publish a violent political pamphlet, which he declined. The pamphleteer was particularly anxious on the subject, and said, " I know, Sir, that it will sell, for I intend to

Misrepresentation and sophistry, when employed to protect injustice, or to conceal illiberality, will be refuted and condemned; whilst a disposition to view the subject upon principles of equity and enlarged philanthropy, whether expressed by the voice of individuals, or the acts of chartered bodies, will always be appreciated and respected.

The Author wishes to be clearly understood by every class of men, whose occupations are alluded to in this Inquiry. He is the friend of the Physician, where ability and integrity are conspicuous, and would have more pleasure in defending the rights and privileges of their College, if exercised only for the expressed intentions of its establishment, than in making such animadversions upon it, as the present occasion seemed to demand.

He is the friend of the Hospital, or consulting Surgeon, where superiority of talent is on a par with superior estimation; and he still clings to the hope, that the time is not far distant, when *The Court of Assistants* will act with candour and liberality towards those members, who address them with respectful deference, and that they will begin to correct the numerous and palpable abuses, which can only exist by their unwarrantable acquiescence; from that moment will they find in him a steady supporter of their authority, a task, which would afford him more satisfaction than to censure their acts as *a public body*, particularly,

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"write against it!" The bookseller, being a man of integrity, as well as a reputable trader, dismissed the *patriotic* politician with a very short answer.

when some of its members are objects of his personal esteem and private friendship.

He is the friend of the *regular* Apothecary, who has an honourable solicitude for the welfare of his patients, by a careful selection of medicines, and a laudable accuracy in their composition; and who conducts his practice upon those principles, which should ever be conspicuous in the professors of a learned and liberal art.

He is no enemy to the trading Chemists and Druggists, when they are properly qualified for their assumed duties of compounding, and shall cease to adulterate their medicines: but, until some improvement has been effected in this particular, they must not expect to escape remark, where they deserve the most severe reprehension.

He is friendly to the Bill about to be presented to Parliament, because he is convinced of the honourable intentions of its promoters, and the utility which would result from a correct discrimination of the qualified from the unqualified practitioners of a profession, which has always been considered the most useful or destructive in civilized society; and his only wish is, to see it regulated upon such principles as will ensure respect to its meritorious members, and protection to the public. To obtain this end, he is anxious that its provisions should have a deliberate discussion in Parliament, and, in offering to every Member the means of becoming acquainted with the subject, he is so far from imitating the example of those, who have clandestinely endeavoured to *forestal* their vote by partial representation, illiberal inuendo, or perversion of the truth, that he is desirous of trusting the question to its own merits, without requiring the support even of his personal friends in either House, unless they shall be convinced of the expediency or necessity of the measure; but, he will bow to their decision, and, in the sentiment of the Mantuan Poet, console himself with the satisfaction of having endeavoured well:—

——" Mens sibi conscia recti,
" Premia digna ferat."

POSTSCRIPT.

AFTER Chapter IX. was written, and in the hands of the Printer, the Author was informed that the following communication, from the Royal College of Surgeons, had reached the Secretary of the Associated Surgeon-Apothecaries. It is now before him.

" Royal College of Surgeons, 11th Oct. 1813.

" SIR,

" I HAVE to acquaint you, that your letter of the " 7th of July last, addressed to the Master, Go- " vernors, and Court of Assistants of the Royal

" College of Surgeons of London; and since, an " enclosure of some printed papers, have been re- " ceived.

" I am Sir,
" Your most obedient,
" humble servant,
" EDM. BALFOUR, SEC.

" Mr. W. T. Ward, &c."

Such, then, is the notice of the Royal College of Surgeons, concerning the subject of the before-mentioned respectful address, after an elapse of three months! This notification, for it is no reply, was, of course, dictated by the Court of Assistants, as this rare piece of literature is in the hand-writing of another person, and signed only by the Secretary. Would it be possible for men of sense, or of common discretion, if they should even forget the usual courtesy of gentlemen in the custom of replying to the *contents* of a letter, or address, to be so blinded by the possession of " a little brief autho- " rity," as not to foresee the train of events which must follow a persistence in such conduct, towards a majority of the members of the College? They may, perhaps, disavow all interference with the medical affairs of *Apothecaries;* but, are they prepared to say, that the practice of Midwifery, which has long been extensively exercised by Surgeons in town and country, has no reference to the duty of the Court of Assistants, as the superintending body? Will they have the temerity to assert, that it is not of importance to the community, for this department of the *profession of chirurgery*, commonly called *Surgery*, this *manual operation*, to be understood and conducted upon principles of science? Are they not aware, that hundreds of individuals would be annually lost, but for judicious aid in difficult parturition? If they should not venture to maintain these positions, why do they not examine candidates, who intend to make themselves useful in this practice, or recal those, who have entered into it, to ascertain their relative qualifications? This question can be promptly answered, and the assertion as easily proved, *Because the Court of Examiners are totally unacquainted with this department of professional knowledge, and have never been engaged in the practice of it.* Is it not time, therefore, that some arrangement should be made to protect the public from the direful effects of ignorance and presumption, in a cause so nearly allied to the best feelings of humanity? (See Chapter V.)

For what purposes do Surgeons give thirty guineas to the College for a London Diploma, and half that sum for liberty to practise their profession in the country; and, afterwards, continue to pay twenty shillings annually, unless it be to obtain distinction, and to secure protection; to possess the power of having their complaints listened to, the causes of them investigated, and their grievances, if any, redressed? Is it consistent with common decency, that this aggregate of money and annual tax should be employed merely to build a magnificent temple without an oracle? Is it consonant with the beneficent views of the Royal Founder of the College of Surgeons, that *a few* of its members should be invested with an exclusive power of management, and the nomination of their successors, when they can be proved to be unable to do all their duty, by not having attended to an important department of practice—Midwifery?—when they are unwilling to defend the rightful interests of its general members, and protect the public from the baleful influence of impostors, and who, when respectfully appealed to, add insult to injury?

With respect to the letter *signed* by the Secretary, the Author was, at first sight, almost tempted to believe, that some new French diplomatic *detour* was intended: an humble imitation of the Secretaryship of Mons. Maret, in the pretended repeal of the Berlin and Milan Decrees: and that, when the affair shall have come to an exposition, which illiberality and injustice will certainly produce, and men will be made accountable for their acts, the blame may be shifted to the juvenile copyist: for the precious document is in a youth's hand-writing. Yet the Author wishes to persuade himself that, not only the Secretary of the Royal College of Surgeons was too busily employed in matters of more consequence than to be able to write so *long* a letter himself; but, that he had not even time to read it over, and, merely added his signature; and, farther, that the Copyist, or Sub-Secretary, had so closely imitated the rapidity of his superior, as to have, *unintentionally*, omitted the most material part of the communication; namely, *the answer to the contents of the address and printed papers;* and that, hereafter, there may be found on the books of the College at that date (October 11, 1813) a regular, official, and dignified reply to the respectful Address of the Committee of Surgeon-Apothecaries of England and Wales.

The College of Physicians have, unhappily, refused to give their advice, or assistance in an affair of public and professional importance: but, they have treated the appeal with the civility of Gentlemen. The Court of Assistants of the College of Surgeons, by an insulting apathy towards the public, and the members of their College, who are represented by the Committee, have *unnecessarily* committed themselves in a state of hostility, which every considerate man must view with regret.

Oh! that all men would learn to make a distinction between cunning and wisdom; and, if they happen to be placed in a situation of *nominal* superiority, and invested with power *to maintain and improve the respectability of the body over which they preside, and to confer benefit on the public,* that they would be ashamed to practise the little arts of little minds; but, that they would prove themselves worthy of those dignities, by a display of talent and feeling, which would command respectful admiration, and be alike creditable to the head and the heart!

THE END.

London: Printed by J. Barfield,
91, Wardour-Street, Soho.

ST. GEORGE'S HOSPITAL

(Note relative to page 18.)

Although it must be evident, that it is neither the intention, nor the wish of the Author to depreciate the public estimation of The Fellows of the Royal College of Physicians, (see page 67, and elsewhere) but, merely to assert the just claims of the Apothecary, when educated according to the usage of the present time; yet, it has been suggested to him, that a misconception of his sentiments may be inferred, from what he has omitted to express in page 18. He, therefore, takes this opportunity of observing, that the only difference between the qualifications required from a Fellow and a Licentiate, consists in the former being requested to construe a few sentences from a Greek copy of Hippocrates and Aretæus. But, as no gentleman can become a candidate for a Fellowship, until he has been admitted a Doctor of Medicine at one of the English Universities, and, to attain to that honour, he *must have given* several proofs of his acquaintance with the Greek tongue, this part of the examination in Warwick-lane is quite immaterial.

No one, it is presumed, will attempt to maintain, that a *full and sufficient knowledge* of Anatomy, Physiology, Pathology, and Therapeutics, to form a superior Practitioner, can be obtained at Oxford or at Cambridge; but that these *must* be studied to advantage in London, or Edinburgh, and, the sources of instruction being alike open to those, who are designed for Physicians, Surgeons, or Apothecaries, the superiority of talent, as a Practitioner, will be possessed by the most diligent, whatever may be his *nominal* distinction in society. The principal advantage of the University being to *secure* a good literary education, and the emoluments of a Fellowship in the Royal College of Physicians.

The period of more than ten years, however, which must be passed in keeping the terms of an University, before a Doctor's degree can be obtained, and the occasional absence of gentlemen from College during the intervals, afford an excellent opportunity of pursuing the *essential* studies, above alluded to, with success.

Presented to the St
George's Hospital
Library by Thomas [illegible]
House Surgeon. 1832

MEMOIRS,

&c.

MEMOIRS,

HISTORICAL AND ILLUSTRATIVE,

OF THE

BOTANICK GARDEN

AT

CHELSEA;

BELONGING TO THE

Society of Apothecaries

OF

LONDON.

ST. GEORGE'S HOSPITAL LIBRARY

London:

PRINTED BY R. GILBERT,
ST. JOHN'S SQUARE, CLERKENWELL.

1820.

WELLCOME
LIBRARY
INSTITUTE

TO THE

MASTER, WARDENS, ASSISTANTS,

AND

MEMBERS

OF THE

Society of Apothecaries of London,

THESE

MEMOIRS OF AN ESTABLISHMENT

HIGHLY HONOURABLE,

AS WELL TO THEIR

PREDECESSORS, AS TO THEMSELVES,

ARE MOST RESPECTFULLY INSCRIBED

BY THEIR OBLIGED HUMBLE SERVANT,

HENRY FIELD.

At a Special Court of Assistants of the SOCIETY *of* APOTHECARIES, *held at their Hall on* FRIDAY *the* 28th JULY, 1820,

MR. FIELD, a Member of this Court, presented to the Court an Historical Account of the Society's Garden at Chelsea, compiled by himself:

RESOLVED,

THAT the Thanks of this Court be given to Mr. FIELD for his Donation, and that the said Account be printed to the number of One Thousand copies, and that a copy be presented to each Member of the Society.

EDMUND BACOT,
CLERK.

MEMOIRS

OF THE

BOTANICK GARDEN AT CHELSEA.

Of the various and important events which have taken place, during the two centuries that have elapsed since the Society of Apothecaries became a separate and independent Corporation, there is no one which reflects greater honour upon it as a Society, and more forcibly evinces the zeal, energy, and disinterestedness of its early members in the promotion of science, than the establishment of a Botanick Garden at Chelsea.

Were not the fact indisputable, it would scarcely be credited by posterity, that this expensive design was commenced at a time when the Society could not with propriety be said to have emerged from its state of infancy; when it was totally destitute of any disposable funds, which could be employed for that purpose; and at a period when their Hall had been recently destroyed by the memorable fire of London. The early re-edification of their Hall, so necessary for the conduct of their general affairs, was indispensable, and must have been a primary object with the members. Their private pecuniary resources would have been, according to every rational conjecture, too much exhausted by this necessary work, to enable them to enter upon a new undertaking, whose principal design was honourable reputation, without any prospect of worldly advantage.

The earliest record which we possess of a Botanick Garden in England, was that of the truly celebrated John Gerarde, the father of English herbalism. He flourished in the latter end of the 16th, and in the beginning of the 17th Century. His garden was attached to his house in

Holborn, and he published a catalogue of it in the years 1596 and 1599.

The next, in order of time, was that of a man equally celebrated, though in a somewhat different way, the elder Tradescant, who about the year 1630, established at South Lambeth, a garden for the culture of exotic plants, which was carried on with great success for many years by him, and his son. Tradescant was likewise a great collector of subjects in the various branches of natural history; and his collection, which was considered very valuable in its day, went to Mr. Elias Ashmole, by whom it was, in 1677, presented to the University of Oxford.

Mr. William Watson, a member of this Society, (afterwards Sir William Watson, Knt. M. D.) visited this garden at South Lambeth in 1749. He informs us, that Mr. Tradescant's garden had been for many years totally neglected, and the house belonging to it empty and ruinous: and though the garden was quite covered with weeds, there were to be seen among them manifest footsteps of its founder. The names of a few plants he enumerates, and he speaks of two arbutus's of a very large size, and of a rhamnus catharticus, about twenty feet in height, and nearly a foot in diameter, which still remained there.

The next garden in succession is, most probably, that of the Society of Apothecaries, which in a few years arrived at a very honourable degree of eminence ; and, what is still more important, has continued to the present time, and now flourishes with increasing energy and success ; while these its predecessors are so totally annihilated, that their situations are scarcely to be discovered, and their existence is known only from the records of the times.

Though collections of exotic plants in the vicinity of London, both belonging to private gentlemen, and to scientific nurserymen, are numerous and extensive, yet this Society may still claim the distinguished honour of possessing the only depository of plants, exotic and indigenous, in the vicinity of this great Metropolis, belonging to a public body.

Private gardens, depending generally on the life or fortune of the proprietor, are of a nature too evanescent, to allow many of the natives of foreign climes, to arrive at that state of perfection and hardiness, which length of time only can accomplish in this variable climate. A public garden, therefore, the property of a Corporation, the nature of which secures permanence, offers the best prospect of bringing to maturity these delicate productions of warmer countries, and of discovering and ascertaining how far they may be naturalized with us. It is well known that this has, in many instances, been already accomplished; and will, doubtless, be attained in many more productions of the vegetable kingdom from different quarters of the globe, where it is now, perhaps, least expected.

The Society of Apothecaries have already supported their garden during a century and a half, and from the increasing respectability and science of its members, especially of those to whom its government is committed, there can be no doubt it will be continued, Deo adjuvante, with augmented zeal, success, and utility, even to the latest posterity.

It is much to be lamented that the early history of this Botanick Garden is involved in very great obscurity. The materials for forming it are extremely defective. It is by no means probable that such a design could have been carried into effect without much previous deliberation, without due investigation by the appointment of committees, and such other methods of inquiry as are usually
1673. adopted upon occasions of similar importance; but on this the records of the Society are totally silent.

From a recital contained in the release of the ground, upon which this garden was laid out, granted many years after this period by Sir Hans Sloane, it appears that Charles Cheyne, Esq. (afterwards Lord Cheyne) by his indenture of lease, bearing date the 29th of August 1673, did demise 1673. and grant unto the Master, Wardens, and Society of the art and mystery of Apothecaries of the City of London, their successors and assigns, the piece and parcel of ground and premises therein mentioned, to hold from Michaelmas then next ensuing, unto the full end and term of sixty-one years, at the yearly rent of *5l.*

It is singular, that the first mention made of the garden at Chelsea, in the minute books of the Society, should be in a way purely incidental. It is there stated (21st June) that several members proposed to 1674. build a wall round Chelsea garden at their own expence, with the assistance of such subscriptions, as they might be able to procure; provided the Court of Assistants would agree to pay *2l.* every year for ever to each of the six Herbarizings, which proposal was accepted. The proprietors of the Laboratory Stock gave *50l.* towards the building of this wall, on the condition that they were to be allowed a piece of ground in the garden for herbs.

1674. It is surely right that the names of these liberal minded men be recorded, though posterity can know little more of them. They were as follow: Messrs. Sykes, Gardner, Rouse, Stratton, Reeves, Power, Warner, Watts, Ja. Rand, Leigh, Gaunt, Hollingworth, Lowry, and Hull.

Nothing more occurs relative to the garden during the two succeeding years; when a circumstance is mentioned, the nature of which is very difficult to understand. 1676. In the month of June of this year, it was stated, that the Court of Assistants agreed to take Mrs. Gape's lease of the garden at Westminster off her hands, for the remaining two years for the sum of 16*l.* the rent being 2*l.* per annum; with the liberty of removing the plants to Chelsea garden.

Whether the Society were in possession of a Garden at Westminster for the cultivation of exotic plants, prior to that of Chelsea; or whether it was a piece of ground occupied for the sole purpose of growing medicinal herbs for the use of their Laboratory, which had been formed only a few years before; it is impossible at this distance of time to ascertain. The condition above mentioned, on which the proprietors of the Laboratory Stock contributed to the erection of the garden-wall, seems to countenance the latter opinion. The minute book of that Stock affords no information upon the subject. 1676.

That there was a Botanick Garden at Westminster many years prior to this time, is made quite certain from a late publication of the "Memoirs of the Life and Writings of John Evelyn, Esq;" the celebrated author of the Sylva, and other works. In his Diary is the following anecdote; "1658 June 10th I went to see the medical garden at Westminster, well stored with plants under Morgan, a skilful Botanist." It is extremely probable that this is the garden here alluded to, and that the Society purchased the lease in order to obtain possession of the plants, which it then contained; as it

1676. would certainly be a valuable acquisition to their new establishment at Chelsea.

The name of the first gardener employed by the Society, appears to have been Piggott, of whom however nothing more is known, but that he was discharged on
1677. the 16th of December; and that Richard Pratt was chosen in his room, on the 22nd of January following, who was to be allowed lodging and a salary of 30*l.* per
1678. annum. As this must have been a handsome remuneration in those days, he was probably a man of considerable horticultural merit. In the autumn of this year directions were given, that the garden be planted with the best fruit trees, and it is likewise stated that a good crop of herbs for the use of the Laboratory was furnished from the garden.

The management of this establishment
1679. began now to assume a more systematic form, a Committee being appointed for that purpose, consisting of twenty-one Assistants, thirty Liverymen, and twenty

of the Yeomanry. It is difficult to conceive what could have been the motive for appointing so great a number of persons as are here mentioned, to conduct such a concern. For it is sufficiently obvious, that a numerous Committee is much more calculated to obstruct, than to facilitate the detail of business. In the month of January of this year, Mr. John Watts, a member of the Society, and one whose name has been mentioned as a contributor to the erection of the wall, was appointed to have the care and management of the garden at *50l.* per annum, besides the allowance of one or two Labourers; and in the following year, a green-house or stove was erected in the garden at an estimated expense of 138*l.* It has been supposed, that this is the same building which has been within these few years taken away. It was situate in the lower part of the ground, not far distant from the river. If, however, it was not the same building, there is great reason to believe, that it was an erection on the same site. 1679. 1680.

In the autumn of this year, Dr. Herman 1682.

1682. of Leyden, visited Chelsea garden, and proposed an exchange of plants, which proposal Mr. Watts went to Holland to
1683. carry into effect. About this time four cedar trees were planted in the garden near the river, being at the time of planting three feet high. Two of them remain at this day; the others were cut down, after continuing about a century, in consequence of their decayed state.

The expense of the garden, which is stated to have been 130*l.* annually, exclusive of the gardener's salary of 50*l.* began now to be a matter of serious con-
1685. sideration; in order to reduce this expense, fresh proposals were made to Mr. Watts, the result of which was, that he entered into articles of agreement (now in existence) with the Society; in which he covenants to take upon himself the care, culture, and management of the garden, for the term of seven years from Michaelmas 1685, to repair and keep in repair the stove, green-house, and other buildings and utensils contained in it, and to make a catalogue of all the plants; for which he was

to be allowed by the Society the annual 1685. sum of 100*l.* besides such expences as he might incur in cultivating that part of the ground allotted to the use of the Laboratory Stock; with liberty to dispose of the fruit and supernumerary plants, for his own benefit.

An order was made, that the Master, Wardens, and Assistants should each be allowed to have a key of the garden, at his own expence.

It is truly gratifying to observe the degree of importance which this garden had attained, in little more than ten years from its establishment, and this in the judgment of a man well skilled himself in Botanical knowledge, Mr. Evelyn, who, in another part of the above-mentioned Diary, writes thus, " 1685 August 7th I went to see Mr. Watts, keeper of the Apothecaries garden of simples at Chelsea, where there is a collection of innumerable varieties of that sort: particularly, besides many rare annuals, the tree bearing jesuit's bark, which had done such wonders in

1685. quartan agues. What was very ingenious was the subterraneous heat, conveyed by a stove under the conservatory, all vaulted with brick, so as he has the doores and windowes open in the hardest frosts, secluding only the snow."

1691. In a view of the gardens near London, taken in December of this year, communicated to the Society of Antiquarians by the Rev. Dr. Hamilton, Vice President, from an original MS. in his possession; and published in the 12th volume of their Archælogia, this garden is thus described—" Chelsea physick garden has great variety of plants both in and out of greenhouses: their perennial green hedges, and rows of different coloured herbs are very pretty; and so are the banks set with shades of herbs in the Irish stitch-way; but many plants in the garden were not in so good order as might be expected, and as would have been answerable to other things in it. After I had been there, I learned that Mr. Watts, the keeper of it, was blamed for his neglect, and that he would be removed.

Of the interval from 1685 to the present time we have no information whatever, but Mr. Watts's lease being now expired, the question was in the summer of this year agitated in the Court of Assistants; whether the Society should continue to support the garden, or not. It must be presumed that some material difficulty, probably as to the expected charges of it, presented itself to several of the Members. The good sense, however, of the major part of the Assistants prevailed, and the continuation of the garden was determined upon, when Mr. Samuel Doody undertook the care and expence of it at 100*l.* per annum. This arrangement appears to have been of very short duration, for about two years after, the state of the garden being taken into consideration, Mr. Doody was informed that the Court had considered his proposals, and preferred giving him 100*l.* in lieu of his term, and of the agreement formerly made, than to continue the same; but that they would grant a lease to him, or to any other Members who might desire it, for a term of 21 years. In consequence of this de- 1693. 1695.

1695. termination, a lease of the garden for that term is said to have been granted to Messrs. Doody, Petiver, Dare, and Bromwich, and at the same time it was directed, that a pair of stairs should be made for them; the intention of which, it may be supposed, was to facilitate communication with the river. This lease is not to be found among the archives of the Society; it is probable, therefore, from this circumstance, and also from what followed in succeeding and subsequent years, that it never took effect.

1696. The minute book of the Court of Assistants informs us, that a treaty was now opened with Lord Cheyne relative to the garden. As he had only a life interest in it, this treaty was not then pursued; but
1697. in the following year it must have been renewed, for the Court agreed to accept Lord Cheyne's offer to make their present term in the garden sixty years for the sum of 75*l*. There were then about thirty-eight years unexpired; this must therefore have been intended as an addition of twenty two years. Notwithstanding the

acceptance of this proposal by the Court 1697. as above stated, it is extremely doubtful whether such an agreement ever took place. The original lease from Mr. Cheyne is not to be found, nor can any other writing upon the subject be discovered; therefore whether this agreement was carried into effect by indorsement, or by a separate deed, cannot now be known. But what seems decisive upon the subject is, that Sir Hans Sloane's conveyance of the garden, many years after, takes no notice of this extension of the lease, though the original lease of sixty one years is distinctly recited. Had such an extension of the term then existed, it would have been too important to be passed over in silence.

About this time a new proposal relating to the garden was presented by Mr. Doody, and referred to a committee, who reported that they approved the same, and agreed with him to carry it into effect. Of the nature of this proposal nothing can be known.

A long period of time again elapses 1706.

1706. without any intimation of the passing events respecting the garden, which must have continued under the principal management of Mr. Doody until his death. This event took place some time in the present year. It may be presumed that his good conduct in the care of the garden during all this time, required no particular interference of the Society. As Mr. Doody was a man of considerable eminence as a Botanist, a few biographical notices of him cannot be unacceptable.

He was a native of Staffordshire, but had settled in London as an Apothecary, and there is reason to believe he acquired considerable practice. His botanical studies must have been much confined to the vicinity of the metropolis, but his diligence in them was unexampled, particularly in the investigation of those imperfect plants, now called Cryptogamous; in which his knowledge was superior to any other person of his day.

The early editions of Ray's Synopsis bear ample testimony to his labours. In the preface to that work (2d. Edit.) Mr. Ray thus notices him, 1706.

"Samuel Doody, Pharmacopœius Londinensis, qui et opus ipsum plurimis speciebus ditavit; et alias, etiam tum species, tum observationes appendici reservavit. Non minus perspicax in plantis discernendis, quam industrius in indagandis; summis in hac Scientia viris æqui parandus." M. Jussieu calls him "Inter Pharmacopœios Londinenses, sui temporis, Coryphæus." In 1695 he became a fellow of the Royal Society. There is a Case of Hydrops Pectoris, written by him, in their Transactions for 1697, and some MSS. of his, on Medical and Botanical subjects, are said to be preserved in the British Museum.

In consequence of Mr. Doody's death, 1707. Messrs. Wyche, Andrews and Petiver, were appointed to inspect the garden, and a committee at the same time chosen to take into consideration the future disposal of it. This committee made their report in the month of March, but it related solely to

1707. their treaty with Lord Cheyne, who it must be presumed had at this time an estate of inheritance in the garden, for he offered to dispose of it to the Society for 400*l.* which being eighty years purchase of the ground-rent, they refused to take it upon those terms. The committee were then desired to consider whether it would be best to part with the garden. In the month of June the committee gave their opinion to the Court of Assistants that it was not best to part with it, and it was ordered that the wharfing of it towards the river be carried into effect, as soon as it could conveniently be done. Notwithstanding this determination to maintain the garden, the expense of it must have been found too great for the finances of the Society to support in their corporate capacity, for in the following January, a Common Hall of the Members was held for the purpose of proposing a subscription for the garden, which was acceded to, and ninety persons gave in their names as subscribers. A committee of the Court was appointed to meet the subscribers, and consult upon terms; in consequence

of which an agreement was entered into,
and in the spring of this year a lease was 1708.
granted to the Subscribers, to which the
common seal was affixed. The following
are the conditions of this lease. It was
made between the Society on the one part,
and the subjoined Members on the other
part, namely,

Robert Gower,
George Dare,
Joseph Nicholson,
Richard Springate,
Samuel Ryley,
Joseph Miller,
Robert Basket,
Benjamin Bouchier,
Henry Sherbell,
Richard Chapman,
John Channing,
John Perkins,
Thomas Robinson,
Robert Sheffield,
James Petiver,
Zachary Allen,
Isaac Garnier, Jun.
Isaac Rand,
Derrick Barnevelt,
John Cox.

on behalf of themselves, and divers other Members of the Society; who had agreed to subscribe for seven years from Michaelmas 1707, so much as to make up the yearly sum of 100*l.* and upwards, such money to be employed in maintaining and improving the physick garden, for the benefit of the Society; and the above-mentioned subscribing Members were

1708. constituted trustees for carrying the same into effect. The Society therefore granted to them a lease for seven years at an annual rent of *5l.* upon condition that they repair the buildings, and maintain, cultivate and support the garden, in the best possible manner; reserving to the Master, Wardens and Assistants, and also to every Member of the Society, who may be, or shall become subscribers to the garden, full liberty of walking therein, either for recreation or instruction. Provision is also made for an annual audit by the subscribers, of the accounts of the trustees, to secure a faithful application of the monies subscribed.

1713. The plan of exonerating the Society from the charge of the garden, by placing it in the hands of individual Members, does not appear to have answered any very valuable purpose; which indeed might have been expected. In the month of August of this year, the trustees for the management of the garden, reported to the Court of Assistants, that from the defect in the payment of subscriptions, and the great expense of supporting the garden, they should not be able to continue the same beyond their present term. The court, considering that it would be for the honour of the Society, and the benefit of the younger Members, that it should be carried on, ordered the following payments to be applied to the support of it; namely, that 1713.

	£	*s.*	*d.*
Every Member should pay annually	0	2	0
A Master on binding an Apprentice	0	5	0
An Apprentice at the time of binding	0	5	0
One Shilling in the Pound of the Laboratory Dividend.			
Every Member dining at the private Herbarizing	0	1	0
Every fine payable to the Corporation to be Guineas instead of Pounds. The Total of these, was estimated at 90*l.* per Annum.			

This year is memorable in the annals of the garden, for affording the first intimation of a communication on its affairs with a gentleman, whose name and memory must always be held in high estimation by every lover of Botanical knowledge, and by every friend to the scientific 1714.

1714. designs of the Society of Apothecaries. On the 1st of July a proposition was submitted to the court by the garden committee, of waiting on Dr. Sloane, (who had purchased the manor of Chelsea, of William Lord Cheyne in the year 1712,) and desiring his sentiments, as to a future interest in the garden. The immediate result of this conference does not appear, but it probably opened the way to that amicable and liberal settlement between them, which took place a few years after.

The lease of the garden, granted in 1708, being now nearly expiring, a committee was appointed in October to examine into its state, and to consider how it may be now best managed. This committee appears to have occupied much time in deliberation, which the numerous difficulties to be encountered might render necessary. It was not until the following September, that an order of the Court of Assistants determined that the garden should be kept up, for the present, by the Corporation.

About this time died Mr. James Petiver, a name worthy of honourable mention in the history of this garden. The exact time of his birth is unknown. He was apprenticed to Mr. Feltham, apothecary to St. Bartholomew's Hospital. After which he settled in business in Aldersgate-street, where he continued the remainder of his life. He was in great practice, and became apothecary to the Charter-house. He accumulated so large a collection of natural history, that some time before his death, Sir Hans Sloane is said to have offered him 4000*l.* for it. After his death Sir Hans purchased it, and it came eventually to the British Museum. He was a Fellow of the Royal Society, and assisted the great Mr. Ray in arranging the second volume of his history of plants, who gives this brief, but expressive and affectionate testimony to his merits. "Jacobus Petiver, non postremæ notæ botanicus, mei amicissimus." 1718.

He officiated as demonstrator of plants to the Society as early as the year 1709, but how long prior to that period cannot

1718. now be ascertained. He probably resigned it to, or, at least, was assisted in that office by Mr. Rand. He died on the twentieth of April 1718, Sir Hans Sloane and other eminent men, in token of their esteem, attending his funeral as pall-bearers.

The new ordinances of the Corporation containing some provision for the support of the garden, the master, wardens, and three other members were deputed to wait on Sir Hans Sloane, to acquaint him therewith. It must have been upon this occasion, that the following statement, copied from a written paper among the Sloane MSS. in the British Museum, was sent to Sir Hans Sloane, probably for his approbation. As it differs materially from the estimate before mentioned, and is several years subsequent to it in date, it will be important to insert it. It is entitled, " a note of paragraphs forty-six and forty-seven, with a calculation of the produce, communibus annis."

To apply the following Fines to maintain the Garden at Chelsea, and the private Herbarizings.

	PRODUCE. £	s.	d.
5*s*. on taking an Apprentice .... 7*s*. 6*d*. on becoming an Apprentice	30	0	0
10*s*. on being made free	8	0	0
20*s*. on Admission as Assistant and .... Liveryman .... 40*s*. on a Foreigner admitted by ...... Redemption	20	0	0
A moiety of Quarterage from Members....	35	0	0
1*s*. in the Pound of Laboratory Dividends, but this not to exceed 20*l*. in the whole	15	0	0
Rent from Tallow-chandlers' Company for Barge-house, from Mr. Abbot, painter, Chelsea	4	10	0
	£112	10	0

This interview with Sir Hans Sloane appears to have been attended with the best effects. When men of candour and public spirit meet together to promote designs of science, and general utility, those difficulties and obstacles, which readily present themselves to worldly-minded characters, soon vanish before them, and are never allowed permanently to obstruct

1718. the glorious objects of their pursuit. Such was the case here, and within the short space of a few weeks, the Court of Assistants were informed, that Sir Hans Sloane was ready to settle the garden upon the Society on the terms proposed.

About this time it was ordered that a ticket of admission into the garden be given to every proprietor of the Laboratory Stock in consideration of their contributing 15*l.* per annum towards the expence of it. This sum of 15*l.* corresponding with the statement given in the Sloane MS. is an evidence of its correctness.

1722. The deed of conveyance of the garden at Chelsea from Sir Hans Sloane was laid before a Court of Assistants on the 8th February 172$\frac{1}{2}$, approved by them, and ordered to be sealed.

The most important covenants contained in this conveyance are the following, namely, The release is dated on the 20th of 1722. February 172½ and is made between the Honourable Sir Hans Sloane Baronet, President of the Royal College of Physicians on the one part, and the Master, Wardens and Society of the art and mystery of Apothecaries of the city of London, on the other part. It recites the original lease from Lord Cheyne, and also the great expence which the Society had incurred, in furnishing and carrying on the garden, as a physick garden, ever since that lease was granted. It states that the Fee and Inheritance of the ground and premises were then vested in Sir Hans Sloane and his heirs. It further declares, that to the end the said garden may at all times hereafter be continued as a physick garden, and for the better encouraging and enabling the said Society to support the charge thereof, for the manifestation of the power, wisdom, and glory of God in the works of the creation, and that their Apprentices and others may better distinguish good and useful plants, from those that bear resemblance to them, and yet are hurtful, and other the like

1722. good purposes; the said Sir Hans Sloane grants, releases and confirms unto the said Master, Wardens and Society, and their successors, all that piece or parcel of arable and pasture ground, situate at Chelsea in the county of Middlesex, at that time in their possession, containing three acres, one rood, and thirty-five perches, with the green-house, stoves, barge-houses, and other erections thereon, to have and to hold the same for ever, paying to Sir Hans Sloane, his Heirs and Assigns, the yearly rent of 5l. and rendering yearly to the President, Council, and Fellows of the Royal Society of London, fifty specimens of distinct plants, well dried and preserved, which grew in their garden the same year, with their names or reputed names; and those presented in each year to be specifically different from every former year until the number of two thousand shall have been delivered. It is further provided, that if these conditions be not fulfilled, or if the Society shall at any time convert the garden into buildings for habitations, or to any other uses, save such as are necessary for a phy-

sick garden, for the culture, planting and 1722
preserving of trees, plants, and flowers, and such like purposes; then it shall be lawful for Sir Hans Sloane, his heirs and assigns, to enter upon the premises, and to hold the same for the use and benefit, and in trust for the said President, Council, and Fellows of the Royal Society, subject to the same rent, and to the delivery of speciments of plants, as above mentioned to the President of the College or Commonalty or Faculty of Physick in London; and in case the Royal Society shall refuse to comply with these conditions then in trust for the President and College of Physicians of London, subject to the same conditions as the Society of Apothecaries were originally charged with.

Power is also reserved for the President, or Vice President of the Royal Society, and for the President, or Vice President of the Royal College of Physicians, once or oftener in every year, to visit the said garden, and examine if the conditions above specified are duly observed and complied with.

1722. In the spring of this year, a committee consisting of the Master, Wardens, and nine other members of the Court of Assistants, who had been appointed for the purpose of putting the garden into order, and taking upon them the management of it, reported to the Court their opinion, that the present gardener should be discharged, and upon their recommendation Mr. Philip Miller was appointed in his room. The name of the person now discharged is not mentioned, but their choice of a successor was peculiarly happy, and reflects great credit upon the discernment of the committee. The biographers of this great man, Philip Miller, say that he succeeded his father in this office. What their authority for this assertion is, does not appear. The records of this Society are silent upon the subject; it is, therefore, not improbably, a mistake.

Regulations for conducting the affairs of the garden were drawn up by this committee, and approved by the Court on the 21st of August. These regulations are entered at length in the minute book of the garden Committee, dated the 26th October 1770. 1722.

In the month of August of this year, the first presentation was made of fifty plants to the Royal Society, agreeably to one of the covenants contained in Sir Hans Sloane's deed of conveyance.

The Society having now obtained complete possession of, and a permanent interest in the garden, very properly turned their thoughts to its state and condition, which it may readily be supposed, must have been, both as to repair and cultivation, in a very dilapidated state. It had been for many years prior to this in the hands, and under the management of private individuals, who could not be expected to expend more upon it than was absolutely necessary; and when the Society again resumed the conduct of it, the uncertainty of their tenure at that time, would have deterred them from any material expenditure.

To facilitate means of repairing the gar-

1723. den and putting it in order, recourse was again had to a common hall, or meeting of the members at large. This was held on the 27th of June, when it was agreed that every Freeman should pay 2*s.* 6*d.* per quarter, 2*s.* of which was to be applied to the use of the garden; this payment being afterwards thought too large, it was by a subsequent Common Hall, (16th January, 172$\frac{3}{4}$) reduced to 6*s.* per annum; and in aid of it 40*l.* was to be allowed annually by the Society from their Corporate funds. Soon after this the Royal College of Physicians very liberally presented the Society with 100*l.* for the use of the garden. Though the amount of the sums raised by these means could not be very considerable as an immediate supply, yet it seems to have answered the desired purpose, as we meet with no complaint of pecuniarydifficulties for some years after.

1724. The garden Committee recommending that some person should be appointed in the character of Præfectus Horti, or director of the garden, to visit it often, and to take the superintending care and inspection of it, Mr. Isaac Rand was appointed for that purpose; a man eminently capable, and who had for several years been a very zealous promoter of Botany. By way of recompense he was to be admitted a member of the Court of Assistants without a fine, to be excused from all other offices, and to have a salary of 50*l.* As he was at the same time demonstrator of plants, this salary it may be presumed, included the income derived from both offices: to this was afterwards added 8*l.* per annum, being the interest of a Legacy of 200*l.* bequeathed by Mr. John Meres, clerk to the Society, for the benefit of the demonstrator for the time being. He was to attend in the garden during the six summer months, at least twice in each month, to demonstrate the plants to such as should then attend, and to execute such other matters as were by former orders enjoined. 1724.

From a report of the garden Committee, it appears that the whole expence of the garden for the current year was 172*l.* 13*s.* 7*d.* 1727.

1727. Directions had been given so far back as the year 1707 for carrying into effect the wharfing of the garden towards the river. Either this was not done at that time, or executed so imperfectly as to have fallen into decay; for we find an order now given that a wharf should be built along the river before Chelsea garden; and that 1000*l.* be borrowed for that purpose on the Society's Bonds, from such of the members as might be willing to contribute thereto.

1728.

1729. Mr. Isaac Rand laid before the Court of Assistants his "Index Officinalis Horti Chelseiani;" when one thousand copies were ordered to be printed at the expense of the Society. This was a catalogue of that part of the garden which was allotted to the culture of the medicinal plants, shrubs and trees, contained in the Pharmacopœia of the College of Physicians; and was designed for the use of those Apprentices, who attended the Botanical Lectures at the garden.

1732. Among the acting members of the

committee for conducting the affairs of 1732. the garden, occurs the name of James Sherard, a Botanist of considerable eminence, who withdrew from the Society about this time, in consequence of having obtained a diploma, and practising as a Physician. He was the son of George Sherard (or Sherwood) of Bushby in the county of Leicester, and was probably born about the year 1666, as it appears from the court books of the Society, that he was bound apprentice to Mr. Charles Watts, on the 7th February $168\frac{1}{2}$ Mr. Watts, though in practice as an Apothecary, had been about a year before appointed to the care and management of the Garden at Chelsea, which circumstance must have given his Apprentice great opportunity of cultivating a taste for botanical pursuits, and, no doubt, laid the foundation of his future excellence. Mr. Sherard practised as an Apothecary in London, by which he acquired sufficient wealth to enable him to keep a country house at Eltham; where he had a garden, rich in exotic plants. Though he did not appear as an Author himself, he gave his liberal assist-

1732. ance towards the diffusion of knowledge by aiding the efforts of others; particularly of Catesby, who by his pecuniary and scientifick help, brought out his natural history of Carolina; though neither this publication, nor the Hortus Elthamensis of Dillenius, appeared until after the death of Sherard, which took place at Eltham, (August 12th 1735) where he was buried.

He was a younger brother of the celebrated William Sherard LL.D. who was likewise an eminent Botanist, and to whose liberality the university of Oxford is indebted for the endowment of its Botanical Professorship and for other valuable bequests.

The name of James Sherard often occurs in the Synopsis of Ray; and in the preface to the third edition of that work, he gives this eulogy of him in conjunction with another Botanical Friend. "Præcipuas verò, in hoc opere, partes occupant duumviri D. Richardson et D. Jac. Sherardus, Amici nostri honoratissimi, qui, de industriâ, crebris institutis itineribus botanicis, Plantarum Angliæ familiam plurimùm 1732. auxerunt; plantas dubias, earumque loca minus certa restituerunt, et species demùm novas nondum descriptas, ipsi invenerunt."

We are now arrived at a period of great importance in the history of Chelsea Garden. What was the state of the buildings belonging to it prior to this period, whether as it regards the cultivation and preservation of the Plants, or as it respects the comfort and accommodation of the gardener, we are totally ignorant. But the Society at this time, very highly to its credit, formed a design, and began to carry into effect a plan, for erecting a fabrick, calculated to subserve both these purposes, upon a scale of extent and elegance, which would at the same time reflect honour upon its members, and embrace the most approved methods then known of raising and bringing to maturity the more delicate productions of foreign countries, by imitating as nearly as possible the various temperatures of their native climates.

1732. As the expense attending this extensive building would be much greater than the Society's funds could afford, a subscription among the members was again resorted to, which amounted to 549*l.* 14*s.*; the Corporation agreeing to contribute a sum not exceeding 500*l.* for this important purpose.

A Court of Assistants, held the 24th of August, approved the agreement entered into by the garden Committee with Mr. Lambert for building the green-house and two hot-houses for the sum of 1550*l.* but the addition of some flues, proposed by Mr. Miller, caused an increased charge of 125*l.* 18*s.* which was further augmented by the erection and completion of two stair-cases, which were estimated at 140*l.* 18*s.* So that the total expense, as far as can now be ascertained, including the sum of 76*l.* 5*s.* paid to the two Surveyors, Messrs. Oakley and Horne, was 1891*l.* 16*s.*

The buildings were immediately undertaken, and completed in less than two years*. 1732.

During the present year the court made an order, which still further evinced their disposition to forward the cultivation of Botanick knowledge. It was that 20*l.* per Annum be paid by the Society towards the expense of sending a person to Georgia, to collect trees and plants, and to make experiments concerning raising them in England, which sum was in the following 1733.

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* In the bed of a Plinth to the middle break in the front of the green-house lies, inclosed in lead, a copper Plate, on which is engraven the following inscription, viz.

This was the first stone laid by the hands of Sir Hans Sloane, Donor of this Garden to perpetuity, for the improvement of useful knowledge.

August 12th, 1732.

Mr. WILLIAM WITHERS,
Master of the Society of Apothecarys,

Mr. RALPH FORSTER, }
ROBT. HARRIS, ESQ. } Wardens.

EDWARD OAKLEY, Architect.

1733. year ordered to be paid to the trustees for that colony.

As a monument of gratitude to the munificence of Sir Hans Sloane, the Court of Assistants (August 23d) came to a determination to erect a statue of him in marble. It was originally placed in the front of the green-house, but its destination was afterwards changed, and in 1748 it was removed, and fixed on a pedestal in the garden, nearly in the centre, facing the principal building. The reason of this change seems to have arisen from a doubt of the strength of the front wall being equal to the weight of the statue; as it appears that the opinions of three surveyors were required upon this question.

This statue was the work of the celebrated Michael Rysbrach, and was finished in the year 1737, at the cost of 280*l.*

1736. Mr. Zachary Allen, a Member of the Society, and one of the Lessees of the garden in 1707, bequeathed 50*l.* for the 1736. service of the garden.

The names of the subscribers to the 1737. building of the green-house, were ordered to be painted on a suitable frame, and hung up in some conspicuous part of that edifice.

Mr. Samuel Dale, a Member of the 1739. Society, author of the Pharmacologia and some other works, left by his will a legacy of books to the Society, which were ordered to be kept in proper presses to be provided by the committee, and the clause in Mr. Dale's Will relating thereto to be entered in their minutes.

A biographical memorial of a man, whose professional and literary abilities would have rendered him an ornament to any society, must surely be esteemed a just tribute of gratitude to one, who was both a Member and Benefactor.

Samuel Dale was born at Braintree in Essex, about the year 1658; in which

1739. place he practised some years as an Apothecary. In 1693 he first published his Pharmacologia, in an octavo volume. It was afterwards republished in quarto, and went through several editions both in this country, and in foreign parts. His first edition was among the earliest rational books, on the subject of drugs and medicinal preparations, and was coupled with great botanical knowledge. The subsequent editions were so much improved by the author, as to render the book not only at that time, but even at present, a work of considerable value, particularly for his collection of synonyms. Mr. Dale also republished a work of Silas Taylor, entitled, " Antiquities of Harwich and Dovercourt," valuable for its very accurate notices on Natural History. In 1730, he obtained a degree of Doctor in Medicine, became a Licentiate of the Royal College of Physicians, and removed to Bocking in Essex, where he practised until his death, on the 6th of June 1739, in the eightieth year of his age. There is a portrait of him in the Court room at Apothecaries

Hall. He was buried in the Dissenters' burial ground at Bocking. 1739.

The conditions stipulated by Dr. Dale, in relation to his devise of books and dried plants, were as follow, "That the Master and Wardens shall, within twelve months next after his decease, make or erect proper conveniences in their Physick Garden at Chelsea, for the reception thereof, and under such regulations for the keeping and preserving them, as shall be agreed on, and approved by Sir Hans Sloane and his executors after named."

Sir Hans Sloane having been consulted on this occasion, his opinion was, that it would be most proper to have a press or presses made, sufficient to contain the whole of them, that they may be kept by themselves, with an inscription thereon, denoting that these books and plants were the donation of Dr. Dale.

Mrs. Elizabeth Blackwell, the celebrated author of the Herbal, which was published about this time, resided at Chelsea opposite the Physick Garden, for

1739. the convenience of having daily access to such rare and curious plants, as could no where else be found. Her engravings being stated to be after drawings taken from the life, this privilege of access to the garden, must have been of great importance to her.

1741. It will excite no small surprise to find, that the green-house, which had not been finished more than seven years, should be at this time in such a state, as to excite serious alarm for its safety. This, however, appears to have been the case, for in the month of August, the opinion of two architects, Messrs. Gibbs and Dance was taken upon the subject, and delivered to the Court of Assistants; which opinion stated, that the building required reparations to the amount of 300*l.* to prevent it falling down.

1743. Probably the danger was not then so imminent as to require immediate attention; as nothing material was done in it, until the present year, when the repairs attending the garden amounted to 215*l.*

Mr. Joseph Miller, who served the office of Master in 1738, was chosen demonstrator of plants, in the room of Mr. Isaac Rand deceased, with a salary of 34*l.* exclusive of the interest of Mr. Meres' legacy, being 8*l.* **1743.**

An order was made that no person be permitted to gather specimens from the garden without leave from the director or gardener, and that no person whatever, who is not a Member of the Society, be permitted to walk in the garden without the attendance of the gardener.

The improper conduct of an individual must be presumed to have been the reason of this prohibitory regulation, for it is stated that Mr. Hill, (afterwards Sir John Hill,) having exceeded all bounds of reason and good manners in taking specimens from the garden, be in future excluded. **1744.**

Mr. Joseph Miller produced a catalogue of Botanick books presented by the executrix of Mr. Isaac Rand.

1745. Mr. Robert Nicholls presented twelve volumes of dried plants, which were deposited in the green-house.

1746. Mr. Joseph Miller offered to reduce his salary as demonstrator from 34*l.* to 27*l.* which with the addition of Mr. Meres' legacy amounted to 35*l.* This offer the Court accepted, though no reason, whatever is assigned, either for the proposal, or for the acquiescence of the Court.

1747. The condition of the green-house, as already mentioned became now an object of immediate attention; it must have been discovered to have been much worse than was originally supposed, for towards the close of this year, the Master acquainted the Court of Assistants, that he had waited upon Sir Hans Sloane with a statement of the very large repairs, which appeared at this time to be necessary for the garden, which had been estimated at 933*l.* 15*s.* upon which he offered 100 Guineas towards this expense, and to endeavour to procure further assistance from some of his friends, which the Court thankfully accepted; and the repairs immediately necessary amounting to 175*l.* were ordered 1747. to be done, as soon as the season would permit.

March 21st. Sir Hans Sloane presented 1748. 150*l.* towards the repairs of the garden. This very handsome donation may be presumed to have included the 100 guineas above mentioned. Dr. John Wilmer was appointed demonstrator of Botany, in the room of Mr. Joseph Miller deceased. His salary was fixed at 30*l.* per annum, including the interest of Mr. Meres' legacy.

The widow of Mr. Joseph Miller presented twenty two volumes of dried plants, for which the thanks of the Court of Assistants were presented to her.

A subscription among the Members was again proposed to be opened, on account of the great expense to be incurred in repairing or rebuilding the green-house; but as nothing more is said of it, it probably did not take place.

1750 The committee, during the present year, reported that, having carefully examined the garden, they found it in very good order, and were well satisfied at the appearance of a very large number of rare plants, many of which were non-descripts; and these were owing to Mr. Miller's great diligence in settling a correspondence, and procuring seeds and plants from various parts of the world.

1751. The statue of Sir Hans Sloane having been lately removed from its original station in front of the green-house, and placed upon a pedestal in the garden; the following inscription in Latin, prepared by Mr. Warden Chase, was approved and executed:

Hansio Sloane, Baronetto, Archiatro,
Insignissimo Botanices Fautori,
Hoc honoris causâ Monimentum,
Inque perpetuam ejus Memoriam,
Sacrum voluit
Societas Pharmacopœiorum Londinensis.
1733.

On two other sides of the pedestal, are 1751. the following inscriptions,

They being sensible how necessary
that branch of science is to the
faithful discharging the duty
of their Profession, with grateful
hearts and general consent,
ordered this statue to be erected,
in the year of our Lord 1733,
that their Successors and Posterity
may never forget their common
Benefactor.
Placed here in the year 1737.
SIR BENJAMIN RAWLING, KNT. Master.
MR. JOSEPH MILLER,
MR. JOSEPH RICHARDS. } Wardens.

The Garden Committee which, in the 1752. year 1722 was directed to consist of the Master, Wardens, and nine other Members of the Court, was continued the same, as to the number of Members; but it was now ordered that three of them should be changed every year.

The annual charge of the garden, which 1753. for several years past had fluctuated between 200*l.* and 220*l.* was this year increased by an expenditure of 108*l.* in

1753. repairs. This appears to have given rise to the following minute of the Court of Assistants; namely, " A Report of the expense of the garden, for the last seven years, having been taken into consideration; the Master and Wardens were directed to wait on the Earl of Macclesfield, President of the Royal Society, and to represent to him the great expense the Society sustained in maintaining the Botanical garden at Chelsea; for which Sir Hans Sloane made no provision in his will; and to consult with him as to the future measures the Society should take."

This interview most probably took place, but of the result of it there is no account, nor of any thing having been done in consequence of this representation.

1759. A legacy of 100*l.* was received from Mrs. Rand, in trust for these special purposes; that two-thirds of the annual interest be paid to the demonstrator for the time being, for placing twenty newly dried specimens of plants yearly, in her late husband's collection, in room of such as may be decayed, and the other third of such 1759. interest to the Master and Wardens for seeing it done. This legacy was ordered to be invested in 3 per cent. Annuities.

It must be presumed, that there were 1761. at this time no suitable apartments in the green-house for the residence of the gardener, as there had been for many years before; for a memorial was now presented from Mr. Miller, requesting the Society to build him a dwelling in the garden. In consequence of this memorial, Dr. Wilmer and Mr. Miller were desired to procure a proper habitation for the latter and his family, until the Court should be able to give a more satisfactory answer. What steps of a more permanent nature were taken upon this business cannot at present be known.

October 25th Dr. John Wilmer resigned 1764. his office of Præfectus Horti and Botanical Demonstrator; and on the 14th of March following, Mr. William Hudson 1765. was elected to succeed him in those offices.

1767. Mr. Miller presented a memorial to the Court of Assistants, setting forth his services from the time of his appointment in 1722 to that period; and also the various expenses he had incurred for the improvement of the garden, for which he had never been indemnified, amounting to 62*l.* and that his present expenses were such as to consume the whole of his salary.

In consequence of this memorial, the Court of Assistants ordered that 50*l.* be given him as a consideration for his expenditure in correspondence, &c. and that his salary be not increased, but such annual gratuity be given him as the Garden Committee shall recommend, and the Court approve.

The following document, extracted from the minutes of the Garden Committee, and connected, doubtless, with the preceding memorial, is too curious to be omitted. It is certainly of a very singular description, and by no means easy, at this distance of time, to be fully un-

derstood; particularly in relation to the 1767.
payment of the men's wages out of the gardener's salary. It is entitled

"*An exact account of all money received, and the money paid to workmen from Christmas* 1765 *to Christmas* 1766, *by* Mr. Miller, *Gardener, for keeping the Botanick Garden at Chelsea.*

	£.	*s.*	*d.*
To money paid by the Worshipful Company of Apothecaries	50	0	0
Taken at the gate for shewing the Garden	31	4	0
	£81	4	0

Paid to 3 men, 52 weeks at 9*s*. per week ..	70	0	0
——to a fourth man at 10*s*. per week	4	0	0
Charges of several parcels of seeds sent by the Post, and also of plants sent per sea	15	5	0
	£89	5	0

"By which it appears that I am a considerable loser, instead of having any thing for myself. And from the inclemency of the season, I have not received 4*s*. per week on an average since Christmas last."

1768. A gratuity of *50l.* was ordered to Mr. Miller, as an acknowledgment of his various services to the Society, which were enumerated as the ground of such grant.

1769. Mr. Stanesby Alchorne, having been requested to prepare a new catalogue of the books, remaining in the Library at Chelsea Garden, presented the same, in the following year, to the Committee for managing the garden, and received their thanks.

From this catalogue it appears, that the Library consisted almost entirely of books confined to Botanical subjects, 266 in number, and of pamphlets and unbound books about fifty; besides which there were in the Library at Apothecaries Hall 238 volumes of books, the greater part of which were on subjects of Botany, and other departments of Natural History; many of them having been at different times removed there from Chelsea. The Society likewise possessed twenty volumes of dried plants, being the Hortus Siccus of Mr. Joseph Miller; and a bundle of dried plants given by Dr. John 1769. Wilmer, who succeeded the former as Præfectus Horti. Mr. Isaac Rand's collection is not here mentioned.

A catalogue of the plants contained in the garden, and an inventory of every particular of the Society's property there and in the green-house, was ordered to be made. This order was intrusted to a committee, who were allowed to take such assistance as might be requisite; considerable progress was made in it, but in consequence of opposition to it, said to be made by Mr. Miller, great delay was occasioned; and afterwards a new 1770. committee was appointed for that purpose, in order to obviate some difficulties raised by Mr. Miller. Whatever these difficulties might have been, the new committee were not more successful in their proceedings than the former. Fresh complaints were made of Mr. Miller's conduct, which terminated in his request to resign the office of gardener, which resignation was accepted by the Court of Assistants; and the Garden Committee were

1770. authorized to treat with Mr. William Forsyth, who had offered himself as a candidate for that office, and being approved, was appointed gardener. His salary to be 60*l.* per annum, with lodging rooms in the green-house, and coals. He was likewise to be allowed 50*l.* per annum for two or more under gardeners to be provided by himself, but was restrained from selling roots or plants. To these terms Mr. Forsyth agreed, and entered upon his duties accordingly.

Proper rules and directions for the conduct of the gardener having been drawn up, they were entered at length in the minute book of the Committee, (28th December 1770,) and a copy of them ordered to be hung up in the Library.

It is greatly to be lamented that the last years of the services of this eminent Botanist, Miller, which had continued almost half a century, should be shadowed by the dissatisfaction, which subsisted between the Society and him in the affairs of the garden. On his part it may have arisen solely from the imbecility and peevishness consequent upon his great age; and on the part of the Committee from too great anxiety for the success of the garden, influencing them to less forbearance with respect to those infirmities, than they would otherwise have considered him entitled to. Under these circumstances his resignation was highly commendable; and the grant to him of a pension of 50*l.* annually, appears to have produced on both sides a cordial reconciliation; though he survived only a short time to enjoy it. The following Biographical sketch of him cannot be uninteresting to every friend of true excellence. 1771.

Philip Miller was born in or near London in 1691. He raised himself by his merit, from a state of obscurity to a degree of eminence rarely attained by a person in his station of life. In 1722 he was appointed gardener to the Botanick Garden at Chelsea, which office he filled with great reputation for the long space of 48 years. He not only excelled in the knowledge of exotic plants, but was inti-

1771. mately acquainted with the indigenous productions of Britain. He added to his theoretical knowledge, that of the structure and character of plants; and was practically versed in the methods of Ray and Tournefort. Habituated to the systems of these two great men, it is not surprising that he was reluctantly brought to adopt the Linnæan discoveries; but he was convinced at length, by the arguments of Watson and Hudson, of their correctness, and accordingly embraced them.

The first edition of his great work, "The Gardener's Dictionary" was published in 1731 in a folio volume; the eighth edition of that size, and the last during his life-time appeared in 1768. Besides which several editions of an abridgement of it were published in octavo, and one edition in quarto. The merit of this work is too well understood to render any remark necessary. Suffice it to say, that it has been translated into the Dutch, German, and French Languages; and that a new and greatly improved edition of it was edited by Professor Martyn in the 1771. year 1807, in four large folio volumes. He passed some time in Holland to acquire a knowledge of the practice of the famous Florists in that country. His Horticultural improvements were many and great, and he maintained a correspondence with the most eminent foreign Botanists, and particularly with Linnæus; who said of his Dictionary, "Non erit Lexicon Hortulanorum, sed etiam Botanicorum." By other foreigners he was styled "Hortulanorum Princeps." He was a Member of the Botanick Academy at Florence, and a Fellow of the Royal Society of London, being occasionally elected of their council.

He had at various times several pupils under him, who afterwards attained considerable eminence: among whom are to be enumerated Aiton and Forsyth. The latter succeeded him in the care of Chelsea Garden. Mr. Miller's great age and infirmities induced him to resign that office a short time before his death, which took place at Chelsea, on the 18th De-

1771. cember, 1771. He left a very large Herbarium of exotic plants, collected principally from the garden, which was purchased by Sir Joseph Banks. Though possessed of no wealth, his latter days were made comfortable by the liberality of the Society of Apothecaries, in the pension allowed him, to which his long and distinguished services justly entitled him.

Dr. Pulteney says, that Mr. Miller was the only person he ever knew, who remembered to have seen Mr. Ray: and that he should not easily forget the pleasure which enlightened his countenance; it so strongly expressed the "Virgilium tantùm vidi," when in speaking of that revered man, he related to him this incident of his youth.

Philip Miller married the sister of Ehret, the famous Botanick Painter, and had two sons, Philip and Charles. The former, after having worked some years under his Father, went to the East Indies, where he died. The latter, Charles, was educated at Chelsea, and was appointed by Dr. Walker, the Founder of the Botanick Garden at Cambridge, his first Curator; after remaining some years there, he also went to the East Indies, whence he returned after many years with an ample fortune, and became resident in London. He was a good Botanist, and there are some papers, written by him, in the Philosophical Transactions of the Royal Society. 1771.

He died October 6th, 1817, at the age of seventy-eight, and was buried at Chelsea in the same grave with his father.

Nearly half a century subsequent to the decease of Philip Miller, the Members of the Linnæan and Horticultural Societies, sensible of his superior merit, very highly to their honour determined to record that merit, and to make it more extensively known by erecting a monument to his memory; the expense of which was defrayed by a private subscription among themselves.

This was accordingly executed, not im-

1771. mediately over the place of his interment, the situation of which would not conveniently admit it, but in a more conspicuous part of the church-yard. It is a Cenotaph in the pillar form, the pedestal being circular, and the upper part surmounted by an urn enriched with foliage; the whole surrounded with iron railing.

On the pedestal is the following inscription:

Philip Miller,
sometime Curator of the Botanick Garden,
Chelsea;
and Author of the Gardener's Dictionary,
died December 18th 1771, aged 80,
and was buried on the North side of
this Church-yard,
in a spot now covered by
a Stone inscribed with his Name.
The Fellows of
the Linnæan and Horticultural Societies
of London,
in grateful Recollection of
the eminent Services rendered to
the Sciences of Botany and Horticulture
by his Industry and Writings,
have caused this Monument to be
erected to his Memory.
A. D. 1815.

In the summer of this year, it was agreed to embank the garden towards the Thames, with the consent of the Water-Bailiff, on the part of the City of London as Conservators of that river, which embankment was carried into effect at an expense exceeding 400*l.* The first brick of this work was laid on the 7th of June by John Lisle, Esq. Master, in the presence of the Committee, having placed under it two pieces of his Majesty's coin of the present year. 1771.

This embankment was only to recover ground which had originally belonged to the garden, but had in process of time been washed away by the river.

In the spring of this year Mr. William Hudson resigned the office of Demonstrator of plants. Mr. Stanesby Alchorne, a member of the Society, and Assay master of his Majesty's mint, was requested, and kindly undertook to supply his place, *ad interim*, until another should be elected. It was at the same time, recommended to him to introduce a more scientific method

1771. at the Botanick Lectures than had been practised.

William Hudson was a man whose rank as a Botanist was too high to allow him to be passed over, in these memoirs, in silence.

He was born at Kendal, in the County of Westmoreland about the year 1732 or 3. He served his apprenticeship with an Apothecary in Panton street, whom he afterwards succeeded in business. The amiable and learned Benjamin Stillingfleet was his early friend in the study of natural history, and directed the attention of Hudson to the writings of Linnæus with such effect, that he may be justly considered as one of the earliest Linnæan Botanists in England, and probably the earliest author in this country who embraced that system; his 'Flora Anglica' was first published in 1762 in one volume. In his plan of this work he followed very much the example of Ray in describing the places of growth &c. in English, though the book was written in Latin, and the disposition of the plants arranged according to the Linnæan system and nomenclature. The elegant Preface to it is said to have been from the pen of Stillingfleet. 1771.

This publication gave Mr. Hudson considerable reputation as a Botanist, both here and abroad. He had formed some very valuable connexions among the favourers of Natural History, and was the correspondent of Linnæus, Haller, and other eminent foreigners. He was elected F.R.S. 5th of November 1761. He took an active part in the affairs of the Society of Apothecaries, particularly as one of the Committee for the management of Chelsea Garden, and in 1765 was appointed Præfectus Horti, and Botanick Demonstrator to that Society, which office he resigned in 1771. In 1778 he published a new edition of his ‘ Flora,’ in two volumes with considerable additions; and in every respect so much improved as to render it highly valuable at the present time. In the winter of 1783 his house and the greater part of his valuable treasures were destroyed by fire, which was gene-

1771. rally believed to have been caused designedly by a servant, who knew of a considerable sum of money, which he had received a day or two before. Being at that time uninsured, his loss was great, and not only severely felt by a man of his limited resources, but at the same time defeated a project which he had entertained of publishing a Fauna Britannica, for which he had been long collecting materials. In 1791 he became a member of the Linnæan Society. After the fire he removed to Jermyn street: having retired from practice, and having never married, he resided with Mr. and Mrs. Hole, the latter of whom was the daughter of the person to whose business he succeeded. Here he died on the 23rd May 1793, and he was buried in St. James's Church. He bequeathed to the Society his dried specimens of plants, which were delivered by Mr. Bolton Hudson, his Executor.

At the recommendation of the Committee the two northern Cedar trees, being in a decayed state were cut down; and also several lime and elm trees, and some others in the Officinal quarter, which 1771. were considered injurious to the growth of those plants for which the garden was more particularly designed ; leaving, however, as many as might be esteemed consistent with the beauty and well being of the whole.

During the present and following year, a great interchange of exotic plants took place between the Society and the following Noblemen, Gentlemen, and others; namely, from

Her R. H. the Princess Dowager's garden at Kew
His Grace the Duke of Northumberland's at Sion
Mr. Ord's at Walham Green
Dr. William Pitcairn's at Islington
Mr. Gordon's Nursery Garden at Mile-end
Mr. Lee's Nursery Garden at Hammersmith
Mr. Watson's Nursery Garden at Islington
Dr. John Fothergill's Garden at Upton
The Rt. Hon. the Earl of Coventry's
Richard Warner's, Esq. at Woodford
Mr. Bewicke's at Clapham.

A bag of seeds was presented by Joseph Banks, Esq. and Dr. Solander.

It may be recorded as a circumstance of curiosity, that the produce and value

1771. of the two Cedar trees which had been cut down, were of the trunks 133¾ feet, at 2*s.* 8*d.* per foot, and of the boughs, 84¾ feet at 1*s.* 4*d.* per foot, amounting together to a valuation of 23*l.* 9*s.* 8*d.*

1772. Mr. Alchorne, Honorary Demonstrator, produced the twenty plants, which he had added to Mr. Rand's collection the present year, agreeably to the will of the late Mrs. Rand. It must be presumed that this condition had been hitherto regularly complied with, though no prior notice occurs in the minute books concerning it.

Mr. Alchorne, having placed in the garden nearly fifty new trees, particularly of the Cratægi, Mespili, and Pini Genera, which he presented to the Society; the thanks of the Committee were given to him for them.

The same gentleman presented about forty tons of old stones, brought from the Tower of London, for the purpose of raising an artificial rock, to cultivate those plants which delight in such a soil: to which was afterwards added a large quantity of flints and chalk given by Mr. John Chandler; and also a large quantity of lava from a volcano in Iceland, presented by Joseph Banks, Esq. which materials being considered fully adequate to the purpose, it was undertaken, and the erection finished in the course of the summer of the following year. 1772.

It was ordered by the Court of Assistants, that each Member of the Garden Committee be allowed *2s.* for coach-hire upon each attendance, and that the Committee should not exceed *220l.* per annum in the expenditure of the garden, without the consent of the Court.

Mr. Stanesby Alchorne, who had officiated as honorary demonstrator of plants, about two years, since the resignation of Mr. Hudson, resigned his office, and was presented with a piece of plate of thirty guineas value, as a small acknowledgment of his services.

On the 15th of December, Mr. William Curtis was elected to the vacant office of

1772. demonstrator of plants, and Præfectus Horti.

1773. The duties of the demonstrator were set forth at large by the Committee, being as follows:

"1st. The office of Botanical Demonstrator to this Society, is to superintend their garden and gardener, as also their library, and all other matters upon their premises at Chelsea; but with submission always to the superior direction of the General Committee for the management of the Society's Garden. His duty is to encourage and cultivate the knowledge of Botany, as well theoretic as practical, among the students of this Society; for which purpose,

"2dly, He is to attend the Society's Garden at stated times, not less than once in every summer month, (from April to September, both inclusive) to demonstrate the plants, especially in the officinal quarter, with their names and uses. The last Wednesday in each of the above months has been usually appropriated to this service, beginning at nine of the clock in the morning. 1773.

" 3d. He is expected to make some annual excursion, for two days at least, preparatory to the Society's General Herborizing; inviting two or three of the ablest botanical members to his assistance. The intention being to collect such vegetables as are not commonly found in the environs of this metropolis, to be demonstrated by him at the meeting appointed for that purpose, and he will receive 3*l.* towards defraying the expence of every such journey, pursuant to the will of Mr. Robert Loggan, a late worthy member.

" 4th. He is to accompany and conduct the students of this Society in their search after indigenous plants, upon every day appointed for their private Herborizings, which are only five in each summer; when he is desired to use his best endeavours to preserve strict decorum among his pupils; and for directing and confining their attention solely to the intended business of

1773. the day. And as the regular lectures lately introduced on these occasions at the request of the Master and Wardens, have, on account of the times and places, appeared insufficient for teaching accurately the elements of botanick science; it is now recommended for the demonstrator to consider of some more effectual method of answering so desirable an end.

“ 5th. He is yearly to prepare fifty dried specimens from plants, growing in the Society's Garden at Chelsea, which are to be presented to the Royal Society, by direction of the late Sir Hans Sloane, Bart. having been first approved by the Court of Assistants of this Society. Also to dry twenty other specimens, in lieu of so many plants which shall be found decayed in the collection of the late Mr. Rand, now in the library at Chelsea. These to be placed in the said Herbarium before the first day of May in every year, and there will be fifty shillings paid him for every such service, by appointment in the will of the late Mrs. Rand.

"6th. He is to attend each private Court, 1773. at the Hall during the summer months, to give his advice (if required) relative to the private Herborizings; as likewise to be present at the several meetings of the general committee for managing the garden, where it has been customary for him to act as Secretary. And in this capacity it is earnestly recommended to him to cultivate an extensive botanical correspondence, both at home and abroad; and to keep copies of the same, as the most probable means for propagating the knowledge of this science: for enlarging and improving the garden under his inspection; and for promoting the interest and honour of this Society in general."

These instructions were directed to be entered in the general order book at Chelsea, and a copy of them delivered to Mr. Curtis for his private inspection. The Beadle of the Society was likewise ordered to give proper notice to the demonstrator of every intended meeting of the committee. During the present year various donations of seeds and plants, were re-

1773. ceived from several of the gentlemen before mentioned; and also from

Dr. Young, of St. Vincent's
Captain Blake, seeds transmitted from his Son in China.
Dr. Hope, of Edinburgh
Mr. Malcolm, of Kennington
Mr. Daniel Mildred.

Mr. Curtis's proposal for giving lectures on Botany, at the Hall, by explaining systematically the Principia Botanica, was approved and recommended to be carried into effect on the first and third Wednesdays in the summer months, at nine in the morning; but for some reason which does not now appear, this plan was not carried into effect.

1774. During several days in the month of March, very high tides occurred in the Thames, in consequence of which, the water rose fifteen inches within the nursery; though every endeavour was made to prevent it by damming up the gates, and making trenches to carry off the water.

Mr. Forsyth having complained that his salary was insufficient, the Committee proposed to recommend to the Court of Assistants, that for the augmentation of it, he be allowed to dispose of supernumerary specimens of plants, under proper restrictions, for his own benefit, which he was accordingly permitted to do. This permission is of so very objectionable a nature, that it is difficult to conceive what could have induced the managers to have sanctioned it. 1774.

The subjoined statement of the expenses of this Garden from the year 1741 to the present year, is copied from a paper drawn up by Mr. John Field, an active and intelligent member of the Society, both in this and other departments, particularly in the management of the affairs of the Navy Stock. 1775.

From this statement it will appear that the average annual charge, exclusive of the extraordinary expenses of those years in which important repairs or erections were made, did not exceed 240*l.* This

1775. calculation will be applicable only to the first thirty years of this period; subsequently to which the annual charge was rapidly increasing.

	£.	s.	d.		
1741	289	14	1		
1742	195	12	5		
1743	355	1	9		Repairs £196
1744	238	4	11		
1745	163	19	11		
1746	212	1	0		
1747	245	19	7		
				£1700 13 8	

	£.	s.	d.		
1748	388	6	9		Repairs £175
1749	221	10	7		
1750	234	11	1		
1751	210	19	11		
1752	202	19	4		
1753	322	18	7		
1754	200	16	11		
				£1782 3 2	

	£.	s.	d.	
1755	197	17	4	
1756	213	6	7	
1757	278	14	5	
1758	219	1	5	
1759	215	4	8	
1760	252	10	5	
1761	233	16	6	
				£1610 11 4

1775.

	£.	s.	d.	
1762	204	19	3	
1763	256	15	8	
1764	240	13	4	
1765	195	15	9	
1766	221	17	3	
1767	226	9	9	
1768	322	10	0	
				£1669 1 0

	£.	s.	d.	
1769	282	11	11	
1770	269	5	6	
1771	917	16	8	
1772	383	2	5	
1773	291	15	0	
1774	306	4	3	
1775	339	13	4	
				£2790 9 1

Total amount in thirty-five years....£9552 18 3

The very large expenditure of the year 1771 arose from the expense of embankment, and other extra charges connected with it, as well as necessary repairs.

The Court of Assistants directed that 1776.
every Member of that Court, who had served the office of Master, be a standing Member of the garden Committee, and

1776. that each Member of that Committee, be allowed *5s.* for every attendance.

Mr. Forsyth, the gardener, having complained of the insecurity and inconvenience of his residence, the Committee were directed to examine into the same, and to consider what alterations may be made to improve it; upon which an estimate was presented of such improvements as appeared necessary, amounting to *87l.* exclusive of iron work, which were carried into effect; to which expense was afterwards added *9l.* for the rebuilding two decayed buttresses in the green-house.

1777. On the 27th of August, Mr. William Curtis resigned his office of botanick de-
1778. monstrator; and on the 18th of March following, Mr. Thomas Wheeler, F.L.S. was appointed to succeed him, with an additional allowance of *2l.* for the July Herborizing excursion.

The merits of the late demonstrator, as a Botanist, justly demand, as connected with this Society, some biographical tribute to his memory. 1778.

William Curtis was born at Alton, in Hampshire in the year 1746. His father was a tanner in that town, and in the vicinity of it he received his education, which was of a very confined nature. He was placed an apprentice to his grandfather, who practised as an Apothecary in the same place. He was early led into the study of Botany, and that principally by residing next to the Crown Inn; the ostler of which, John Lagg, a steady sober man, had acquired, by means of the well known works of Parkinson and Gerarde, a considerable knowledge of plants; which so forcibly impressed the young mind of Curtis, as to lay the foundation for a developement of those powers, which afterwards made him so deservedly conspicuous. At the expiration of his apprenticeship, he came to the metropolis, and entered into the service of Mr. Thomas Talwyn of Gracechurch Street. Mr. Talwyn was a Member of the Society of Friends, of which religious persuasion

1778. the parents of Curtis also were. After some time the latter succeeded him in business ; but his Botanical pursuits interfered too much with professional duties to allow his obtaining extensive medical practice, for which there is reason to believe he was otherwise well qualified.

The office of demonstrator of Botany to the Society of Apothecaries being now vacant, Mr. Curtis, who had obtained the favourable opinion of many persons eminent for their knowledge of Natural History, and among the rest Mr. Alchorne, was strongly recommended to the Society by that gentleman as a proper candidate to fill up the vacancy ; to which he was accordingly elected, having previously been admitted a Member of the Society. He continued in that office about five years, when his avocations induced him to resign it. He had united to the study of Botany, that of Entomology. In 1771 he published " Instructions for the collecting, and preserving insects," and in the following year, a translation of Linnæus's Fundamenta Entomologiæ.

Soon after his appointment to the Society of Apothecaries, he commenced public lecturer in Botany, both as to its principles and practice. For the use of his pupils in these lectures, he occupied a piece of ground as a garden, first in the Grange road, afterwards in Lambeth Marsh, and subsequently at Brompton; which last he continued to cultivate until his death; the soil and situation being much more suitable to his purpose than that at Lambeth. The principal object of these gardens was the growth of the indigenous plants of Britain. 1778.

In 1771, he commenced his great work of "The Flora Londinensis," which was extended to six Fasciculi of seventy two plants each. It was originally intended to have embraced all the plants growing within ten miles of London; and was conducted, so far as it went, with the greatest care and accuracy; but the sale of it, never exceeding 300 copies, was not equal to the expense, and it was therefore necessarily given up, which, as a national work, is much to be regretted.

1778. But if this plan failed, he very happily projected another, of a nature, though in many respects inferior to the former, yet more captivating to the public at large. 'The Botanical Magazine' immediately became popular. It commenced about 1787, soon attained a monthly sale of 3000 numbers, and was steadily adhered to until his death. Mr. Curtis had neither fortune nor patrimony ; he here found a valuable estate, but the continued produce of it depended entirely upon the regularity of its publication. Hence he was compelled to a punctuality, of which if he had seen the necessity in his former work of the Flora Londinensis, it would most probably, have been accompanied with greater success.

His friendships were very numerous: among his most esteemed patrons and friends may be enumerated the names of Sir Joseph Banks, Dr. John Sims, Dryander, Withering, Hunter, Dickson, Sibthorp, Lightfoot.

Besides those already mentioned, there

are several minor publications of his, as 1778.
also some papers in the transactions of the Linnæan Society.

He laboured, for nearly a twelvemonth before his death, under a disease of the chest, which put a period to his life on the 7th of July 1799, in the 53rd year of his age; he was buried at Battersea, and left behind him the character of an honest friendly man, a lively entertaining companion, and a good tutor, always ready to encourage noviciates, and to render the science of Botany as attractive as possible.

During this summer, above 100 packets of seeds were presented to the Society from Joseph Banks, Esq. and Dr. Ryan of Santa Croix.

The sum of *25l.* was paid to Mr. Forsyth, as an indemnity for the expences he had sustained from the bad state of his apartments.

The little stove in the garden being too 1779.
much decayed to be capable of repair, a

1779. new one with several improvements was built, the estimated expense being 49*l.* 11*s.* 10*d.*

1780. The Committee for the management of the garden were allowed to expend 5*l.* for refreshments at each of their meetings.

It was likewise ordered that they do not exceed 250*l.* in the expences of the garden for the ensuing year.

1781. Their liberal Benefactor, Sir Joseph Banks, (who is understood to have commenced his Botanical studies in this garden, under the tuition of the venerable Philip Miller,) presented more than 500 different kinds of seeds, collected in his late voyage round the globe.

Mr. Alexander Anderson presented above 100 packets of seeds from St. Lucia.

1782. The Committee reported to the Court of Assistants, that they had considered Mr. Forsyth's plan for reducing the charges of the garden, and find, that, if adopted, it would not save more than 1782. thirty or forty pounds annually, and as they considered keeping up the garden in a respectable manner to be for the honour of the Society, they judged it right to propose some plan of augmenting the income of the Corporation, to enable them better to support this expense; which they thought would be best attained, by charging the rents paid by the two commercial stocks, with such a certain annual proportion of their profits, as might be a reasonable compensation for the lands, and other advantages enjoyed by them from the Corporation; and which, varying according to the profit of each year, would be more equitable than a fixed annual sum.

This plan was approved by the Court of Assistants, and the clerk ordered to give the necessary information to the Managers of the Navy and Laboratory Stocks.

From subsequent proceedings it appears that this scheme, though approved by the Court on the behalf of the Navy Stock.

1782. was not agreed to either by the Committee, or the proprietors of the Laboratory Stock; who only consented to add *25l.* per Annum, to their allowance for the garden, which being considered by the Court, they declined accepting it.

1784. Mr. Wheeler, Botanical Demonstrator, commenced a series of lectures at the Hall, on the principles of Botany, which was carried on about two years, but not meeting with due encouragement in the attendance of pupils, they were then discontinued.

Mr. William Forsyth, the gardener, gave in his resignation in the spring of this year, in consequence of having been appointed to a similar situation in his Majesty's Garden at Kensington. He received the thanks of the Committee for his great care of the garden, while in the Society's service.

William Forsyth, F.A.S. and L.S. was born at Old Meldrum, Aberdeenshire, in the year 1737, and came to London in

1763; when he became a pupil to Philip 1784. Miller in the garden of this Society, whom he succeeded in his office of gardener, in 1771; having been some time prior to that period in the service of the Duke of Northumberland at Sion. He continued until his death, July 25th, 1804, chief superintendant of the Royal Gardens at Kensington and St. James's.

Mr. Forsyth, having for many years given attention to the cultivation of fruit and forest trees, and to the diseases and injuries incident to them, succeeded in preparing a composition to remedy those diseases. In 1789, the success of these experiments obtained the notice of the commissioners of the Land Revenue, and in consequence of their recommendation he obtained a parliamentary reward for this discovery. Though the originality of his invention was by some doubted, and occasioned considerable controversy, yet the issue of these inquiries was upon the whole favourable to him. He published in 1791, his "Observations on the diseases, defects, and injuries of fruit and

1784. forest trees," and in 1802, appeared the final result of his labours in a "treatise on the culture and management of fruit trees," which has been sufficiently esteemed to pass through three editions in a very short time.

The Committee for Chelsea Garden being at this time composed of Members of the Court of Assistants only; it was judged that the addition of some Members of the Livery would be useful. Three of whom were accordingly appointed for that purpose.

Mr. John Fairbairn was elected gardener, who was to make the apartments over the green-house his residence, and to comply with the rules and directions for his conduct, then read to him.

Some considerable repairs were carried into effect during this summer; particularly new slating of the green-house, repairing the glass-work of the various lights, and also the gardener's apartments: the expense of which amounted to about 140*l.*

The tan stove being greatly decayed, a new one was erected in its place, upon the most improved plan, at an estimated charge of 180*l*. 1785.

In consequence of this, and the numerous reparations now required for the various erections in the garden; the propriety of asking assistance from the Society at large was taken into consideration; when it was resolved, that a subscription for that purpose be forthwith opened. This determination was communicated to the Members at the usual Common Hall held in the month of October, and being approved, was acted upon accordingly.

It is a most gratifying feature in the memoirs of this garden, that the Members of the Society have stepped forward with the utmost alacrity, in every period of that history, where pecuniary exertions were necessary for the support of this valuable establishment; which energy was at no time more conspicuous than at the present; for in the following summer, the 1786.
Court of Assistants were informed that the

1786. subscription for the garden had been so successful as to amount to 539*l.* 19*s.* and that after discharging the several workmen's bills, the remainder had been sufficient to purchase 530*l.* in the 4 per cent. Bank Annuities, as a fund for future buildings.

To facilitate the free admission of Members of the Society into their Botanick Garden, and to enable the gardener and his servants to distinguish such Members from strangers, an engraved card suitably ornamented, and endorsed by the Master and Wardens for the time being, was directed to be given to every present and future Member, to which the gardener and his servants are to pay due regard: it being understood that all persons visiting the garden are to be attended by the gardener, or one of his servants, and that the plants be not taken or damaged.

1787. A quantity of loam was procured for the use of the garden from Sion, with the consent of the Duke of Northumberland; and several loads of black mould from

Wimbledon, with the approbation of Earl Spencer. 1787.

Two new stoves were erected in the garden at an estimated expense of 176*l.* 11*s.* 1789.

Several donations of seeds were received this year from the following gentlemen; namely, 1790.

Sir Joseph Banks, Bart.
James Edward Smith, M.D.
Mr. James Dixon, of the British Museum
William Pitcairn, M.D.
Professor Jacquin of Vienna
Mr. Hare, Seedsman, St. James's Street
Mr. Chapman, at Mr. Secretary Stephens, Fulham
Mr. William Hudson
Commodore Gardner of the Admiralty.

It was proposed to erect two new tan-pits in front of the little tan-stove, and new glass cases in the room of the old tan-pits now fallen into decay. This proposal was approved by the Committee; but desiring to proceed with caution, they directed only one of them to be built at present, wishing more satisfactorily to as-

1790. certain the benefit of it, before they incurred the expense of the whole, which 1791. would amount to about 70*l*. This erection gave so much satisfaction, that in the following year the plan was completed by the addition of a second tan-pit.

1792. A new dry stove was erected at the west end of the green-house, in the room of the old one, which was in a ruinous state. The estimated expense was 170*l*. 9*s*. exclusive of the charge of 12*l*. for a leaden cistern to be placed in it.

1793. The following valuable donations are recorded in the present year; namely,

Commodore Gardner, seeds from Port Jackson and Norfolk Island
Dr. James Edward Smith, bulbous roots and seeds from Sierra Leone
Robert Sherson, Esq; seeds from Port Jackson.
Dr. Buxton, bulbs and seeds from the Cape of Good Hope
Mr. Willis, seeds from Africa
Mr. Salisbury, of Leeds, seeds from Madrid
Mr. Dixon, of Covent Garden, seeds from Germany.

1796. The salary of the Botanick Demonstrator which had been for many years 1796. 37*l.* 10*s.* was increased to 45*l.* 10*s.* per annum.

Mr. John Tutton, the proprietor of the wall on the south-west boundary of the garden, having agreed to cede his right to that wall for the term of seventy-two-years in consideration of the Society paying the expense of rebuilding it amounting to 6*l.* 12*s.* his proposal was acceded to, under the advice of the Society's Solicitor, and on the 22nd June 1797, the Corporation seal was affixed to the Lease.

1801. Some encroachment appears to have been made on the Barge-house, which must have been of a very trivial nature, for it was ordered at a Court of Assistants (30th January,) that Mr. Dalston pay 2*s.* 6*d.* for this encroachment, to which he consented.

1804. Two new water troughs, lined with lead, for the culture of aquatic plants, were provided at the cost of 24*l.* and placed in a

1804. convenient part of the garden near the centre.

1806. The dried plants bequeathed to the Society by the late Mr. William Hudson, were presented to Mr. Thomas Wheeler, Demonstrator.

The two Barge-houses were let on Lease to the Goldsmiths' Company for twenty-one years at the net annual rent of 10*l.* for each Barge-house. The tenants to make all repairs and alterations at their own expense.

1807. It was directed by the Committee, that no person be allowed to borrow any book from the Library without their leave; and that no book be retained longer than three months. The Library to be annually inspected at the Committee in the month of August.

1808. Lord Valentia was permitted to be supplied with plants of the true ginger (Amomum Zinziber) Turmeric (Curcuma longa,) and arrow root, (Maranta arundinacea.)

The cedar trees were much damaged by the heavy falls of snow, which tock place during the last winter. 1809.

Several rare plants were presented by James Vere, Esq; from the collection in his garden at Kensington Gore.

It was now ordered that the regular meetings of the Garden Committee be held in the months of April, June, August and September. 1810.

Agreeably to a recommendation of the Committee, it was ordered by the Court of Assistants, that each Member of the Society, pay in future ten shillings and sixpence annually towards the support of the garden, instead of six shillings as heretofore. 1811.

In the month of December died Mr. John Fairbairn, who had held the office of gardener upwards of thirty years. His great age, and consequent infirmities had occasioned much neglect in the management of the garden during the latter years 1814.

1814. of his life. The effects of which were highly detrimental to the well-being of that establishment, and equally disreputable to the Society.

The Court of Assistants, much to their credit, determined in the appointment of a successor to be influenced solely by the merits of the respective candidates.

Sir Joseph Banks, Bart. President of the Royal Society, and Sir James Edward Smith, President of the Linnæan Society; having honoured the Court with letters, recommending in the strongest terms, Mr. William Anderson at that time principal gardener to James Vere, Esq ; as a person, in their opinion eminently qualified to fill that station, he was elected accordingly, with a salary of 100*l.* per annum, and the usual apartments for his residence.

At the same time, a pension of 40*l.* per annum, was given to the widow of the late gardener, with permission, by Mr. Anderson's consent, of her continuing in her apartments ; but she did not long live to enjoy these benefits.

The state of the garden being such as to require immediate attention, both from the great degree of dilapidation which had taken place in the different buildings, and also from the long continued neglect of cultivation; the Court of Assistants having determined to carry it on with energy, prepared to adopt such measures as appeared to them best calculated to restore its pristine state of eminence, and even to advance it to as high a rank in the scale of exotic gardening, as the present improved state of that science would require, in order to establish the reputation of the garden, and the honour of that Society, which had so long patronized it. 1815.

Mr. Anderson, the gardener, having been desired to give his opinion as to the best methods to be adopted for this purpose, recommended the following alterations.

That the old building immediately behind Sir Hans Sloane's statue, which had long ceased to be useful even as a tool-house, be pulled down, and the materials

1815. of it employed in erecting a room behind the little green-house, for the under gardeners to sleep in; in which situation it would be particularly useful to them, being near the flues, which in the winter season, require the constant attention of one man during the night.

That the flues in the several houses in the garden, being badly constructed, be rebuilt on an improved principle, which would cause a considerable saving in the article of coal.

That a pump be fixed in the garden to supply it with Thames water; Spring water being found to injure plants very much.

That the internal garden formerly employed for culinary uses be appropriated to the purposes of Instructive Horticulture; a branch of Botanical Science, which may be made very useful to society.

These recommendations obtained the approbation of the Committee, and, with a general repair of the buildings were directed to be carried into immediate effect. 1815.

The funds of the Society being considered very inadequate to accomplish these extensive designs in a suitable manner; a subscription among the Members was again proposed, which was with their usual readiness agreed to, according to the subjoined scale of payment; namely,

	£.	*s.*	*d.*
Members of the Court of Assistants, each,	3	3	0
——— of the Livery	2	2	0
——— of the Yeomanry	1	1	0

The total sum raised by these Subscriptions was 494*l* 2*s*.

About this time the Horticultural Society of London, being desirous to obtain and naturalize, as far as the climate would permit, all the cultivated variety of vegetables, employed as human food, and as condiments, were anxious to possess the use of a garden to enable them to raise and increase all such rare and improved esculent plants and fruits, as their extensive intercourse promises to supply, in

1815. order that they may be gratuitously distributed.

They therefore made the following proposal to the Court of Assistants; namely, that they may be allowed to use a part of their physic garden for that purpose, under the intire government of the Court of Assistants; and the direction of their principal gardener. They were ready to pay all the expences attending it together with the charge of a helping gardener.

The Committee having maturely considered this proposal declined accepting it on the terms above mentioned; but at the same time expressed their readiness to direct any experiments to be made, by their gardener, in the science of Horticultural Gardening, upon application being made to them for that purpose.

A part of the garden, near the river, has been since chiefly employed in promoting this design, by the planting of various fruit trees and esculent vegetables.

In consequence of a representation made to the Lord Mayor, by the Clerk of the Society, of various depredations made on the shore before the wall of the garden, the Water Bailif examined the same, and engaged that no further encroachment should take place. 1815.

The superintendance and direction of the great improvements and repairs which had lately been carried on, having devolved chiefly on William Simons, Esq. Upper Warden; the thanks of the Committee were given to him for his judicious and economical application of the monies, so liberally contributed by the Members of the Society, in the construction of the different hot houses, flues, &c. in the garden. The total amount of money expended in these repairs, alterations, and new erections, was *574l.* 13*s.* 10*d.* 1816.

The ordinary expenditure of the garden this year, was, *535l.* 8*s.* 11*d.* 1817.

The Barge-house lately occupied by the Society for their own use, being no longer 1818.

1818. required for that purpose, was let on lease to Mr. Lyall, of the Swan Brewhouse, for twenty-one years, from Michaelmas 1818, at a rent of 10*l.* per annum. He being permitted to open a window overlooking the Society's Garden, on paying annually 5*s.* for such privilege, and signing an agreement to stop it up, whenever required by a previous notice of three months. It appeared afterwards that the wall of this Barge-house was in so ruinous a state, in consequence of a common sewer running close to, and forming a part of it, that considerable repairs were necessary to be done to the wall. These repairs were, therefore, executed at the expense of the Society.

The Commissioners of Sewers having been applied to, requesting that they would direct the course of the sewer to be altered, in order to avoid future injury to the building; they gave directions accordingly. The expenditure of the garden this year was 505*l.* 5*s.* 3*d.* according to the subjoined statement.

1818.

	£.	s.	d.
Labourers Wages	130	15	6
Gardener's Salary	100	0	0
Sundry Bills	158	10	4
Ground Rent	5	0	0
Taxes	63	6	2
Committee Expenses	47	13	3

Having now given an account of the rise and progress of this important and beneficial establishment, it only remains to perform the pleasing task of exhibiting a general view of its present state and condition. 1820.

Having seen the many difficulties it has had to surmount, and the repeated efforts which have been made, in various ways, to maintain even its existence, it is truly gratifying to observe the proud eminence upon which the Botanick Garden at Chelsea is now placed. It has within these few years revived from circumstances of great depression, from a state almost bordering upon dissolution, and has attained a

1820. point of superiority, which the warmest wishes of its most cordial friends and zealous advocates could scarcely, in the same space of time, have anticipated. That this has been principally caused by the steady patronage and laudable exertions of the Society of Apothecaries is indisputable; but it must at the same time be admitted, that great merit attaches to their present Gardener, by whose fostering care, skilful management, and unremitting attention, these exertions have been followed up, and carried into effect. A considerable number of new plants have been introduced, and many thousands of seeds sown in the garden within the few years since his appointment to that office. Various improvements suggested by him have been already mentioned, and in addition to these, the employment of sand as a medium of conveying heat to the plants, instead of tan bark, bids fair to become a permanent improvement, as a means of producing a more equable diffusion of that heat; and at the same time causing a diminution of expense; both of them important desiderata in exotic gardening. The little stove was altered for the above purpose in the last year, and it succeeded so well during the late severe winter, that the great stove has been altered in the present year to the same plan. 1820.

By the deed of conveyance from Sir Hans Sloane, two thousand plants were required to be presented to the Royal Society, which has been long since fulfilled. A much larger number has been given than that condition demanded, but it is not easy to ascertain when this presentation ceased.

By an extract from the minutes of the Royal Society, furnished by William Thomas Brande, Esq. one of their Secretaries, it would appear that the last presentation of plants took place on the 17th February, 1774, being the 51st annual presentation, amounting in all to 2550 plants. It is perfectly certain that they were continued long subsequently to that time, but the delivery must either have taken place at irregular periods, or if otherwise, the minute books of the Society of Apotheca-

1820. ries have not regularly noticed them. The last presentation of fifty plants, mentioned in those minutes, is in October 1794, the last preceding that being in October 1791. The entries of former years appear to have been equally irregular.

As a subject intimately connected with this Garden, and equally intended to promote Botanick Knowledge; it may be proper briefly to notice the Herborizing Excursions carried on in the vicinity of London, for the purpose of collecting and demonstrating indigenous plants.

The first institution of Herborizing walks was in the year 1633, at which time only one was appointed in each year. They appear to have been established for the benefit of the younger Members of the Society, and of the Apprentices to Members in general. Since the first establishment the number has been increased to six excursions in each year. Five of these are attended by the Apprentices, and one of them, called the general Herborizing, is confined to the Members only.

This latter is not limited, like the others, 1820. to the immediate vicinity of the Metropolis, but is extended, at the discretion of the Demonstrator, to the distance of twenty or thirty miles, varying the districts for collecting plants in different years. By these means a very large collection, and a greater variety of plants are procured for exhibition.

In the present improved state of Medicine, and in the extended qualifications required to be found in the practising Apothecary, an acquaintance with indigenous Botany becomes an useful, and therefore a necessary appendage to a medical education; to which purpose the Herborizing excursions are admirably adapted. It is very honourable to the Apprentices to observe the alacrity with which they have, especially within the last few years, attended as pupils to the Botanick Demonstrator in these excursions, and the ardour which many of them discover for acquiring this knowledge.

It would be unpardonable here to omit

1820. a just tribute of respect to Mr. Thomas Wheeler, who has for upwards of forty years filled the office of Demonstrator with great ability and reputation.

In the knowledge of Practical Botany, and in the kind and familiar manner in which he communicates that knowledge to the Students he has been excelled by none of his predecessors, and probably equalled by few. For the truth of this eulogy it is only necessary to appeal to a great proportion of the present Members of the Society, who have at various times been his pupils; many of whom are good Botanists, and will readily acknowledge the advantages they have derived from his instruction.

It has been already observed that five of the Herborizing excursions are open to the Apprentices of every Member of the Society. The two first of them, held in the Spring of each year are attended by the Demonstrator and his pupils only, for whom, as they are occupied, from an early hour in the morning until the evening, a

HOSPITA

suitable breakfast and dinner are provided 1820. at the expense of the Society.

To the other Herborizings all the Members of the Society have access, and are expected to be present at the Exhibition of plants; after which the Society dine together at the charge of Stewards, chosen from the Members in rotation.

To these Exhibitions and Dinners, several Physicians and other professional men are generally invited as visitors. The frequent recurrence of these opportunities must among other good effects, have a happy tendency to promote friendship and social harmony in the several departments of Medical Science.

THE END.

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ADDRESS

TO THE

GOVERNORS & SUBSCRIBERS

OF THE

CHARING CROSS HOSPITAL,

ON SOME

EXTRAORDINARY PROCEEDINGS THAT HAVE LATELY TAKEN PLACE AT THAT INSTITUTION,

AND ON THE

MANAGEMENT OF THE HOSPITAL

IN GENERAL.

BY T. J. PETTIGREW, F.R.S., F.S.A., F.L.S.,

Senior Surgeon to the Hospital.

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1836.

WELLCOME LIBRARY INSTITUTE

ADDRESS.

The occurrence of a most extraordinary proceeding on the part of the Members of a Special Committee, appointed by the Board of Governors of the Charing Cross Hospital, on the 1st of August last, compels me to address the Governors and Subscribers of the Institution, to demonstrate to them the system of management that has hitherto been pursued, and to point out the serious consequences that must ensue unless the entire direction of the Hospital be changed.

The Hospital has now been in operation for two years and a half; and, making all proper allowances for the difficulties that naturally arise in the carrying on of a new undertaking, it will still be admitted to be a sufficiently long period to have all relating to the care of the patients in proper order, and means established for the due protection and welfare of the sick and hurt inmates.

As there are no Institutions which afford so many opportunities for the exercise of true charity as the Hospitals, so ought the relief extended to be generously and promptly given. Poverty carries along with it at all times great suffering; but, when sickness becomes super-added to it, it is impossible to conceive a state of more absolute wretchedness. Of such a description are the objects committed to the care of the professional officers of the Hospitals, and such has been the character of those entrusted to my attention. I believe it will not be asserted by any one that I have been neglectful of my duties either in a professional or a humane point of view; if it should be, I desire only that the Governors and Subscribers of the Hospital will go round the wards and make enquiries of the patients and the nurses. In short, I fear that some, and that no little portion, of the animosity which has been evinced towards me has arisen from the expressions of gratitude which it has been my happiness to receive from my patients in the Hospital. This, however, is by no means the sole cause of the displeasure of the Director and his friends—another will be found in my desire, in common with that of my respected colleague, Dr. Sigmond, to unite the Hospital with the School of Medicine at the King's College, by which a vast accession of strength would be derived to the Hospital, a considerable increase of its funds produced, a connection of the highest respectability established, and a source of deserved emolument opened to the various professional officers of the Institution. But this Dr. Golding, the Director, feels would take from his hands a portion of that control and authority which he and his friend Mr. Robertson, the Honorary Secretary, have for so long a time entirely possessed. Reference to the committee-book of the Hospital will show that rarely more than *two* or *three* members, often only *one*, attended besides the Director and the Honorary Secretary, and all the measures for the regulation of the Institution, its Medical School, &c., have originated from these few individuals.

Now, let us see the manner in which the duties of the Director (an officer, be it remembered, not to be found in any other Hospital of the Metropolis, and in this instance filled by one of the medical officers) are performed as it respects the patients, and then let the Governors and Subscribers say whether it is proper that their charity should be dispensed by one so deaf to humanity, and so tyrannous in his conduct. These are heavy accusations to lay at the door of any man, and particularly so to one who has been the chief instrument in erecting the Hospital in which his functions are to be exercised. But the fact is that that man, who as he proceeds along the wards of the Hospital ought to be greeted by the blessings of the poor, now only receives their execrations and their curses. His manners are revolting. His mode of address rude, abrupt, and cruel; rarely does a kind word escape his lips —all is harshness and severity. If a patient has been but a few weeks in the Hospital, his anxiety manifests itself to put him out. But the dismissal rests with the Professional Officer under whose charge the patient may happen to be, and not with the Director; and should the poor creature unfortunately be upon full diet, or his calamity such as to need the daily addition of a little porter, the enquiries repeatedly made to such patients as to when they are going out, the length of time they have been in, &c., are unbounded. I will give an instance. It occurred to a patient of the name of Moffat, admitted under my care for one of the very worst ulcers of the leg I ever saw. This was an exceedingly well-behaved man, labouring under great poverty, and thus his disease was greatly aggravated. I took him into the Hospital, attended to his general health, and the improvement of his limb was most extraordinary. It was a matter of great instruction to the pupils, as showing what proper rest and food might do under apparently the most unfavourable circumstances, and a limb was thus saved to the individual. I found this man, in the course of my rounds, often very much agitated;

and I at length (but not without much urgency) obtained from him an avowal that, upon Dr. Golding visiting the wards, he was always spoken to in such an unkind and harsh manner as to the length of time he had been there, the time when he was to go out, &c., that he could not endure it. He even wished me to discharge him; but I represented to him that, as he would speedily be quite recovered, I wished him to remain until that should take place, and that, if Dr. Golding spoke to him again upon the subject, to refer him to me as the officer having the charge of the case, and to whom, and not to the patient, certainly the application should have been made. Suddenly, however, one night, goaded by Dr. G.'s conduct, the man in a state of distraction quitted the Hospital; he was seen by one of the house pupils at three o'clock in the morning, wandering about the streets without a place to shelter him, and without a sixpence in his pocket. God knows what has become of the poor fellow!

I will cite another case. It is that of a poor German, recommended to the Hospital by Mr. Stulz, who generously gave me one hundred guineas for the Institution. This was a very intelligent and well-conducted man, and of most quiet manners. He had a disease of the hip joint, for which caustic issues were necessary, and a long confinement to bed. At length he was sufficiently recovered to walk, and I recommended his getting into the Sea-Bathing Infirmary. Her Royal Highness the Duchess of Kent liberally granted the man a letter, and he was received into the Institution. At his departure he left the following letter for me, and another of a similar description, but of greater severity of expression, for Dr. Sigmond, who had attended the case with me:—

"*Charing Cross Hospital*, 13*th July*, 1836.

"Sir, I return you my sincere and grateful thanks for the very great kindness and humanity I received from you while under your care, and for the interest you felt for my admission into the Margate Infirmary.

"I feel your kindness the more when I consider the harsh behaviour of Dr. Golding, who ought to have treated me with more kindness, according to the general hospitality of his country, when he considered I was an afflicted foreigner, and a friendless stranger in London.

"I am, Sir,
Your most obedient
Humble Servant,
George Swemmer."

"*Mr. Pettigrew.*"

I could mention other cases, but these are sufficient for the present purpose.

I must now direct your attention to the most injudicious parsimony that was ever introduced into any Establishment. The crutches are purchased for the Hospital at 2s. per pair; and, as it was found that some of the patients after being permitted to take them out with them (being unable from the effects of their accidents to walk without such assistance), did not return them, the Director ordered that all patients going out with crutches should leave a deposit of a *shilling*. Now, look at the effect of this. I will give it in a case: A poor man, a labourer, met with an accident in the course of his employ, and fractured his leg. He remained seven or eight weeks in the Hospital. The union of the broken bones being perfect, I recommended to him to return to his family. The sister of the ward asked "what he was to do about the crutches?" I was ignorant of the order that had been given, and replied, "Why take them to be sure; and, when he is able to get about without them, let them be brought back to the Hospital for some other afflicted person."—"Sir, Dr. Golding says that a shilling deposit must be left, and the poor man has it not." He had not a shilling in the world. I paid the deposit, and bade the man not care about the crutches. Here is a poor creature, in the exercise of his calling, meeting with a serious injury that incapacitates him from getting his bread and supporting his family—with a wife and family thrown perhaps upon the parish or casual benevolence for assistance during his confinement—upon going to his home anticipating with delight the happiness of again having his partner and his children assembled around him, once more enjoying their society and their embraces, stopped at the threshold of a CHARITABLE ESTABLISHMENT for a shilling deposit for his crutches! Oh! would it not have been more generous and more satisfactory to have given the poor fellow a shilling to get a dinner, and regale and celebrate his recovery and his return to his family, than thus to damp his spirit and check his joy. What are likely to be the feelings of the poor patients who are thus treated, and in what way are they likely to speak of the Hospital? Then, as Governors of an Institution in which it is incumbent upon all to look to the finances and to suppress unnecessary expenditure, what are you to say to this conduct? Is it not more economical to risk the return of the crutches, by the aid of which the man can leave the Hospital—can by a change of air, also, improve his general health—than to remain a week or two longer to be fed and supported at the expense of the Establishment?

It has unfortunately occurred to me, during my connection with the Hospital, to witness the wretched supply of the necessary instruments and bandages. Finding that verbal messages given to the sisters of the wards and to the house-pupils were of no avail, I have latterly given written orders, and from dating them have succeeded in obtaining a rather better supply; but I have found it necessary to give the same order more than once, and I had an instance of an omnibus-driver (whose name I forget), who had a fracture of the thigh, kept, unnecessarily kept, in his bed at least ten days longer than he might have been, from the inability to obtain crutches for him. When a man has been obliged to be confined to one position for seven or eight weeks, it is a dreadful cruelty to retain him one day beyond the time absolutely necessary for his recovery. Another man being taller than ordinary, a man with a fracture of the neck of the thigh bone, was unable for many days to obtain the proper-sized crutches, and he ventured to use a shorter pair than were adapted to his height. He fell, and was in consequence kept to his bed for some days from the shock he had sustained. I have heard of a case of Mr. Howship, a child with a fractured thigh being dismissed the Hospital with a very crooked limb from the want of splints. The want of these, of bandages, &c., has been truly distressing—every fracture that has to be adjusted is delayed by the necessity of making the proper pads, &c., at the time. I was called upon only a few days ago to tap a patient of Dr. Shearman's labouring under ovarian dropsy; and, upon asking for a flannel roller, there was not such a thing in the Hospital! There are nothing but ordinary rollers, and those scanty in number—no eighteen-tailed bandage—no complicated bandages required for particular injuries; and will it be believed that to this day there is not a proper operating table! The operations are obliged to be performed upon a table by far too broad for the purpose, and one which is used at the lectures. There are no pullies for the reduction of dislocations, nor a bolt even placed for the use of them. I might enumerate many other things, but I am sure these are sufficient to show that the management of the Hospital, under the guidance of the Director, has been very defective, and that the accidents liable to occur are very ill proprovided for. All this results from a parsimony that is quite unnecessary, not to say injudicious; for the funds are by the Report of the Committee to the last General Meeting declared to be adequate, and the Hospital is not in debt. It is "free from debt and incumbrance of any kind." Yet, if a patient is to be visited after dark, not a candle is to be had to examine him, but at the expense of the sister of the ward, the lights of the Hospital being restricted to the jets of gas in the apartments. These are all matters for the Director's attention. It has been in vain to apply to him, and the Special Committee designate them "frivolous;" the Governors at large will, I flatter myself, entertain a different opinion, else farewell to the objects of these Charitable Institutions.

The complaints I have urged on this head and a variety of others have brought down upon me the animosity of the

Director and his two coadjutors, Mr. Robertson and Dr. Shearman, and has given rise to a gross and false accusation, with the intention of inflicting a wound on my reputation, which I shall presently notice in a particular manner. I must here, however, again allude to a proposition made to the officers of the Hospital, through Lord Henley, a very liberal benefactor, communicating a letter from the Bishop of London, suggesting the advantages that would arise to both institutions from a union between this Hospital and the King's College. Upon a proper understanding I believe there cannot honestly be two opinions upon the subject; all will readily see the mutual benefit that may be derived. But, as the propositions made on the part of some of the authorities of the King's College were of such a nature that they could not fairly be entertained, the negociation was broken off and not again renewed for a considerable time. During this period changes took place in the Medical School of the Hospital; and having received the most ungracious and unjust treatment from the Director and a portion of my colleagues (who go in all things agreeably to his wishes), in being made answerable for certain payments relating to the Dissecting Room, with which I had nothing whatever to do, being the lecturer on Anatomy and Physiology at the Hospital (a duty I undertook solely to save the school from sinking), I expressed my dissatisfaction at the conduct exercised towards me, and stated my determination to do every thing in my power to promote the union of the College and Hospital, as advantageous to both Institutions and to all the officers concerned. I communicated this in writing to the Director, and he has the letter; yet the Special Committee ground an accusation against me upon this head, and state that I "did most unfairly carry on with the knowledge of Dr. Sigmond (the only officer unfortunately with whom I could entertain any confidence) a correspondence on the subject of a proposed connection between the two Institutions without the knowledge and authority of the other Medical Officers and Governors* of this Establishment, which the Committee consider was uncandid with regard to those officers, and highly reprehensible in relation to the Governors;† and the Committee consider that he (Mr. P.) should no longer belong to this institution."

It was therefore resolved unanimously "that Mr. Pettigrew's services as a professional officer of this Hospital be forthwith dispensed with, and that he be no longer an officer thereof." And a similar measure of extraordinary kindness has been exhibited to my excellent and enlightened friend and colleague

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* I should like to know if the Governors were ever made acquainted with any of the communications until the 2nd of July last?

† Why not censure the Director for this? Why not expel him?

Dr. Sigmond, of which I doubt not he will immediately upon his return to town apprize the Governors. The fact is that there has been nothing uncandid on my part in the business; for I gave the Director notice in these words, after some observations upon his conduct on another subject: "This, however, relieves me from a delicacy which I have hitherto maintained with regard to the subject of a connection with the King's College, to which my attention is now powerfully directed, and which it is my determination by every means in my power to promote. I do this upon the ground of its being the most advantageous step for the Hospital as well as the present professors of the Medical School, and I have only to request that you will, as Director of the Hospital and its School, appoint an early meeting to take into consideration the propriety of immediately entering into a negociation with the council of the King's College, with a view to a union between the two Institutions." This letter bears date the 10th of February 1836, and preceded any communications whatever held by me with any authority of King's College; *the assertions therefore of the Special Committee are unfounded and fall to the ground.* And, as to the nature of the communications themselves, why, they amounted merely to a little conversation with the Rev. Dr. D'Oyly and a note or two, all of which I have given in to the Special Committee, and not kept a single copy, deeming them of very little consequence, but in which I was endeavouring, as I therein state, to arrive at something like an understanding, upon which with fairness I could lay the matter before my colleagues, and show to them that their interests as well as those of the Hospital were not to be neglected. There was no negociation whatever going on upon the subject; it was merely a correspondence to obtain an understanding or basis upon which one might be proceeded in; and the Member of the Council, Dr. D'Oyly, can be referred to upon the subject.

But the matter, although placed upon this ground, is not to be considered as based solely upon it, for an attack has been made upon my character; and upon this head, as a matter which I hold dearer than life itself, I trust I shall be pardoned if I prove to be a little prolix.

During the period of twelve years I was the sole Surgeon of the Institution. It was at that time a Dispensary in Villiers Street, and the duties were arduous. I laboured with assiduity, and endeavoured by every means in my power to promote its welfare and contribute to the increase of its finances. I never derived one farthing of emolument for my services. When it was thought proper to build, and the Institution came to assume the character of a Hospital, I suggested to my colleagues, Dr. Golding and Dr. Shearman, that it would be necessary for me to have some one with whom I might consult on the various operations necessary to be performed, and one who could share with me the responsibility attaching to such onerous duties. It was admitted; and I was told by Dr. Golding, in the presence of Dr. Shearman, that, in consideration of the length of my connection with the Institution and the exertions I had made, I should be permitted to name a person with whom I should like to be associated, and who would be received with the sanction of my colleagues, if an acceptable and proper person. It was further stated that it should be distinctly understood by whoever should be chosen to co-operate with me that he would not be entitled to receive any part of the emoluments derivable from the office for a period (and five years was expressly named by Dr. Golding, the Director), as it was held to be unfair and unjust to place upon an equality any individual who might not have taken any part in the establishment of the Hospital with one who had devoted so many years of labour and contributed so much to its support.

Upon its being known that the appointment of a second Surgeon was thought of, Mr. Howship applied to me upon the subject. He was at this time a stranger to me; we were not in the habit of visiting each other, nor had I ever been in his house. He represented to me that he should be delighted to be connected with me in the Charing Cross Hospital, and that he should consider any assistance rendered him in attaining this object as the greatest of obligations, and never forget it. He urged the particular advantage of his collection of preparations, foolishly eulogizing them as exceeding in value those of St. George's Hospital, and put forward other reasons to induce me to favour him as a colleague. Duly considering the matter, and with a firm determination to do my duty to the Hospital, I weighed well Mr. H.'s pretensions. I regarded him as an experienced and qualified individual of even longer standing in the profession than myself, a Member of the Council of the Royal College of Surgeons, the author of some works on surgery, one in the habit of lecturing, furnished with preparations to illustrate a course of lectures on surgery, and, above all, living contiguous to myself, and therefore readily to be obtained to supply my place if absent in any case of emergency that should arise. These were, in my mind, advantages which outweighed those suggested to me by many others who proposed to me on the same matter; and I therefore resolved to communicate to him freely and unreservedly that which had been proposed to me by my colleagues. I stated the offer made to me of naming a person who should be acceptable to them, and their conviction that I was entitled to receive the whole of the emoluments derivable from my department for the period I have named; but I proposed to Mr. Howship, as a private arrangement between two gentlemen, that instead of my receiving the entire emoluments, he should be entitled to an equal portion upon the consideration of paying to me in lieu of those emoluments the sum of £500. Now this has been made the subject of a charge of having sold my influence to secure the election of Mr. H. to the office of Visiting-Surgeon to the Hospital. In the first place the charge was made of having sold the appointment; then it was changed to the selling of influence to obtain the appointment. It is neither the one nor the other. I did no such thing. It is merely a *composition* for the amount of fees that may be received; and taking into consideration the length of time in which it was proposed I should receive the fees, and the probable amount of them from the progress of the Hospital (under judicious management), it must be admitted to be a very small sum for such advantages. The grounds upon which I made this proposal, and which were communicated in writing to Mr. Howship, and marked *private*, were these: that the duties of the Hospital were more likely to be duly and cheerfully performed and amity maintained by a perfect equality of the officers; that however just it might be felt to be on the part of whoever might become my colleague to refrain from receiving any fees for the time specified, yet that to toil on month after month, and year after year, in the performance of duties, the return for which would be continually appropriated to another's benefit, was likely to lead to a laxity of attention and a diminution of zeal; that by an equality being established each surgical officer would be entitled to lecture on their branch of the profession, and thus to divide the emoluments derivable from their class, and that the pupils might have the advantage of two instructors in the same branch, and benefit by the joint means of illustration of the same. To render these advantages, therefore, to the Hospital, and to make the duties more agreeable to the feelings of the colleague to be chosen, I proposed that, in lieu of receiving the whole of the emoluments, Mr. H. should present me with a sum by way of composition, and thereby become entitled to an equality of position, an equality in lecturing, and an equality of the fees derivable from every source connected with the surgical department. This was an arrangement strictly private in its nature, and in no way interfering with the objects of the Hospital, or any rules laid down by the Governors. That it was private is shown by Mr. H. being called upon to return the letters when the first negotiation (in 1832 I think) broke off; and that he did not then, or at the time of his election (September, 1834), or even after that, consider the transaction as at all unjustifiable is proved by the following fact—that he, shortly after having been appointed Visiting Surgeon by the Board of Governors, did ask me to promise him my influence in support of his pupil, Mr. Turner, to become Assistant Surgeon when an opportunity presented. I replied that I could make no promise, but that it would certainly give me pleasure to do any thing that might prove agreeable to my colleague. He then added that, if that were effected, he should be able to obtain a portion of the amount he had paid to me. This person now presumes to state that he is not prepared to maintain that such a transaction is justifiable as a general principle; and I therefore leave the Governors and Subscribers to form an estimate of his veracity. I find that at this time he regularly brought Mr. Turner with him to the Hospital, and, if necessary, that gentleman can be examined as to the matter; and he will be able to prove that Mr. H. has been in the habit of proposing to him a variety of things for pecuniary consideration, and even a partnership in his own professional engagements, and a joint property in his museum. Mr. Howship chooses to say that he has been "misled." He has indeed, but not by me. He is the willing tool of designing men to endeavour to blast the character of one who is obnoxious to them from his determination to resist tyranny, and to see the charitable objects of the Governors and Subscribers of the Institution carried into effect. Considering the whole of Mr. H.'s conduct in the business, I would apply to him a remarkable passage in the works of one of the ablest English writers, addressed to a "certain Esquire." "You are wholly out of my danger: the weapons I use will do you no hurt; and to that which would keep nicer men in awe you are insensible. A needle against a stone wall can make no impression. Your faculty lies in making bargains: stick to that."

But, to return to the arrangement between Mr. H. and myself, I contend that it is to be looked upon simply as a composition and nothing else; and this is shown by the manner in which I performed my part of the contract, for I desired the Director to pay over to Mr. H. an equal portion with myself, which has been done, from the moment of Mr. H.'s connection with the Hospital. Mr. H. says he was principally governed by the desire of being Surgeon to an Institution which he had reason to believe would one day become one of the most distinguished Hospitals of the metropolis. What his desire was we cannot know, nor does it signify—what he paid the money for is the point; and this, I think, has most clearly been shown to be for the receipt of half the fees from the admission of Pupils to the Hospital, and to an equal participation in the fees derivable from the Lectures; for it must be borne in mind that, without my concurrence, Mr. H., being only the Visiting-Surgeon, could not have been permitted to deliver any part of the Surgical Lectures; as the Senior or rather the only Surgeon of the Hospital, the duty of teaching that branch of study, according to the Laws of the Hospital, was vested exclusively in me. These, the consequences of his agreement, have been most rigidly fulfilled. That he was actuated by this consideration is also apparent from his stating to me a sum of money paid at another Hospital, and drawing his inferences as to the respective value. He wished to reduce the amount to £300, and I declined the proposal, regarding the probable amount of fees, &c., to be received during five years as being in value far exceeding that sum. This was the cause of the negociation (as he called it, to Dr. Shearman) being broken off; and he, not I, renewed the subject in 1834, and expressed his willingness then to accede to my former proposition. It would have been more advantageous for me to have received the whole of the fees for the five years, rather than compounded as I did; but a variety of circumstances of a private nature rendered the receipt of £500 to me at that moment a matter of personal convenience. Now, I beg of the Governors and Subscribers to remark that I did not disguise this from the Director. He told the Special Committee that he received a letter from me alluding to the same, and that he suspected there was a transaction of the kind going on. He says he communicated the same (though conveyed to him *privately*) to Dr. Shearman and to Mr. Robertson. None of these gentlemen said one word to me on the subject; although I had laboured with them for years, and with great assiduity, they none of them ever said a word to me about it. If they held it wrong, surely they should have noticed it and prevented it; and I am sure that the explanation I have now given would have then satisfied them, whatever may be the case at the present time.* I am persuaded that not a word would have been said on the matter had I not complained of various things in the management of the Hospital and School.

It is curious to find that although this composition for my fees, admission to lectures, &c., is urged as a serious charge, yet the laws of the Hospital recognize pecuniary transactions in this respect; for it is expressly stated that, in the event of any teacher resigning or dying whilst a teacher at the Medical School, he is entitled to receive, if resigning, from his successor, a sum equivalent to the clear receipts resulting from his exertions during the twelve months immediately preceding his resignation; and, if dying, his widow or administrator to a like sum; and if not demanded by either, then the Secretary can claim it after the lapse of three years for the funds of the Charity.

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* Dr. Sigmond heard of the transaction, and mentioned it at the time to Dr. Golding; but that gentleman and Dr. Shearman have the most convenient memories for things they choose to recollect, but no further. Dr. Sigmond even states the room in which he had the conversation with Dr. G., but Dr. G. knows nothing about it!

I now submit, most confidently submit, this subject to the consideration of the Governors and Subscribers at large, and I trust that they will not fail to look back and review my character previous to and during the period I have been connected with their Institution. This has been a period of not less than fourteen years, and, during which time, until the Hospital came into operation, I have received no pecuniary emoluments whatever, nor have I been benefitted by any intercourse with the Governors, with whom it has not been my good fortune to hold any communication. Every thing that I could do to promote the welfare of the Hospital I have done—my family have lent their exertions, and I have left nothing undone which it was in my power to do, to promote the prosperity of the Institution. I have uniformly sacrificed personal advantages for the general good. I have supported the Medical School far beyond all my colleagues, by my Collection of Preparations, without which it could not have gone on. And here allow me to contrast my conduct with that of Mr. Howship, and this will also explain how the charge against me of having sold the appointment came to be brought forward. When the preparations were to be arranged in the Museum, I found that Mr. H. had ordered particular locks to be put upon the cases in which his were to be contained. I had, in common with my colleagues, conceived that the whole were to be arranged in an order calculated to give instruction to the pupils, and that they would be used in common by all the teachers of the School. I objected to Mr. H.'s preparations being placed in the Museum, unless agreeably to this feeling; and he, determining on a selfish appropriation, declined to do so, or to permit any body to use them but himself, or at his especial loan—a condition that no gentleman could submit to—notwithstanding I had admitted him to half the Surgical Course. He complained to Dr. Golding upon the subject of my remonstrance, and said he did not consider he was bound to this when he gave me the £500. But I need not say any thing further respecting Mr. H.

Having thus disposed of the Charge preferred against me, I must recapitulate a few points, and next direct attention to the manner in which the subjects under consideration have been proceeded with; and this will point out to the Governors the necessity of looking into the management of the Hospital.

That personal feelings instigated the enquiry I have alluded to is evident from a variety of circumstances. Thus Dr. Golding says he suspected the transaction in 1832, and noticed it to his colleague Dr. Shearman, and to Mr. Robertson. Mr. Howship told Dr. Shearman that the negotiation was broken off. In 1834, it was renewed; and, upon the election of Mr. H. taking place, Dr. G. is desired by me to pay to Mr. H. an equal portion of all receipts belonging to the Surgical Department. Dr. G. and

Dr. S. admit that they gave to me the nomination of the person I should like to be my colleague. They think me entitled to stand in a different position from one who has not spent years in promoting the erection of the building but they cannot recollect (I perfectly can) stating the term of five years. Why else should I have mentioned this period to Mr. H ? He admitted the justice of the arrangement, and, after a time, acceded to my proposals. Now, Dr. Golding knew from my letter that it would be to me "a personal convenience;" and will he venture to say that he could otherwise than feel that an arrangement had been made by Mr. H. with me, when I gave up to him immediately upon his election an equality, not only of money derivable from all sources in the Surgical Department, but also an equality of rank in the printed papers of the Hospital, and an equal right to the admission of cases ? Could he imagine it likely that I should labour for upwards of twelve years to form the Institution, during which time it was incapable of yielding any emolument, and that when this point had been obtained, and the prospect of a tolerable addition to my income created, I should so entirely forget what was due to my own interests and to the support of my large family, which Dr. G. knew rested entirely upon my own professional exertions, as to forego, voluntarily forego, one half of the amount, without receiving any equivalent ? Dr. G. knows too well the value of money, and is too close in all his pecuniary transactions, to have given me or any one else credit for so much disinterested generosity. Then, again, look at his own statement, that he wrote to Dr. Shearman, upon hearing from Mr. H. that he had given to me £500, and this letter is dated, November 2d, 1835. In what way was the matter brought forward ? Why, by being put as an abstract question—put *after* dissensions had arisen with respect to the management of the Medical School—put for the opinion of the teachers, to know whether it be justifiable or not, in any officer, to barter away the appointments of the Hospital. I knew that this was an attempt to take an unfair advantage, to be afterwards used for some wicked purpose. I saw to what it pointed, although I could not have suspected that any one could have been guilty of so base a breach of confidence as to have communicated such a transaction as having taken place. I objected to such questions being proposed, and urged that if there was any case of the kind, or grounds to suspect such a case, that the fair and manly way was to state it, and that it should be taken before the Governors at large. This was, however, declined; and will it be believed that Mr. Howship either proposed or seconded (I do not know positively which) a resolution to declare that such a proceeding was improper and unjustifiable ? From this time I refused to attend any more meetings of the Medical Committee until the offensive resolution was expunged. Well, there it stood, and there it stands now; but it is singular to remark the distance of time that was permitted to elapse by Dr. Golding before this matter, so *serious* as it has been styled, was taken into consideration. Dr. G.'s letter to Dr. S. was November 2d, 1835; his proposition to the Medical Committee, May 2d, 1836. It was my intention to bring it myself before the Governors. I told my colleagues I should. I applied to the Secretary to get a meeting. I was at length told I must get six Governors to sign a requisition for the purpose. This is not a very easy matter when it is considered that no person is a Governor who has not paid Forty Guineas,* and that the class of persons subscribing this amount are, of all others, the least likely to interfere in the management of the Hospital, or to mix themselves up with any disputes. I resolved, therefore, as an Annual General Meeting was soon to take place, to leave the matter to that opportunity. This meeting can, most improperly, be held whenever it pleases the Committee, or rather the Director and Honorary Secretary; and it was in this instance most artfully contrived to be held on the 1st of August, when most of the Governors would be away from town.† And now look at the manner in which I was to be prevented bringing forward the matter at the Board. At the end of the Report presented to that meeting was appended a notice expressive of the regret of the Committee that dissensions among the Medical Officers had arisen, and that some circumstances affecting the well-being of the Hospital had occurred; and they recommended (though according to the Laws they possess the power of enquiring into and regulating these matters themselves) a Special Committee to investigate these circumstances and misunderstandings, and I therefore did not urge the subject to the General Meeting. I expressed my dissatisfaction at the manner in which it was proposed to conduct this Committee; but as I was told, and Dr. Sigmond was told likewise, that we should have every opportunity afforded us to bring forward any complaint we thought proper, and as we understood that the subject could afterwards, if deemed necessary, be made a matter of appeal to a Board of Governors, the resolution for a Special Committee was carried; and then, to my astonishment, Dr. Golding delivered in a list of persons to form that Committee. He enquired if I had any name to propose; but that I told him I could not think of doing in a matter which personally concerned myself. He had no such scruples, he had no such delicacy, as I shall now show. The Committee consisted of the Rev. J.

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* Or paid twenty guineas prior to 1833, but the lists do not specify the payments so made.

† The original law of the Institution declares that this meeting shall be held in every year during the last week in March, April, May, or June.

W. Worthington, the Rev. W. Lambert, W. Green, Esq., G. Stephen, Esq., E. Downes, Esq., J. Lavies, Esq., J. Wood, Esq., G. Canton, Esq., W. Cawthorn, Esq., N. Clarke, Esq.

First, of the Chairman, the *Rev. J. W. Worthington.*—This gentleman is only an Honorary Governor, and I hold it to be indelicate and improper for any one in this position to take an active part in the internal management; it should be left to those who have paid their money to the support of the Hospital. All the Honorary Governors have been made at the suggestion of Dr. Golding, or the Honorary Secretary, and are therefore, unless free from the usual weaknesses of our nature, liable to be biassed in their opinions upon questions relating to the individual by whom they have been proposed. Mr. W. does not appear to have formed an exception to this general rule, for he exhibited himself a most active partizan. It was so grossly manifested as to call for, on my part and that of Dr. Sigmond, marks of decided disapprobation. We protested against his perpetual interference. In stating the charge against myself, he was most manifestly partial and unjust, and this conduct was only equalled by the pertinacity and obstinacy with which he defended himself. His interruptions were perpetual. His attempts to confuse and explain away any thing likely to operate against Dr. Golding were incessant. This is not the proper conduct of a Chairman; it is inconsistent with the impartiality that ought to characterise him.

2. *The Rev. W. Lambert.*—This gentleman is only a Life-Supporter of the institution, an Honorary distinction given to him for some services rendered, but which position does not entitle him to take part in the proceedings of a General Meeting. How he came, therefore, to be present at one, or to be put upon the list of a Special Committee is unaccountable; and I must say that his presence has vitiated the whole of the proceedings, and cannot be admitted according to the laws of the Institution.

3. *Mr. Green.*—This gentleman is a druggist in Tothill Street, Westminster. He supplies the Hospital with drugs. The quality of these (of which Dr. Sigmond made very just complaint) was to be investigated at this committee, but was not pressed on account of Mr. G.'s presence. He was objected to at the General Meeting, but he was urged to lose all sense of delicacy and insist upon serving. I expressly noticed it to him at the first meeting of the committee; and, although I gave the reason at his own specific request, it had no effect. He has for a very long time been an intimate of Dr. Golding, and he therefore continued to attend and to be present at all the meetings. This is in opposition to a law of the Institution, which states that "no benefactor or governor whilst serving the charity, or who has so recently served it that his bill or account has not

been audited or ordered to be paid, is to be a member of the Committee."

4. *Mr. Stephen* is an Honorary Governor. This gentleman appears only to have attended a part of one of the meetings, and not to have been present when the Committee came to their decision.

5. *Mr. Downes* is a very old supporter of the charity. He attended two meetings only, and was not present at the decision.

6. *Mr. Lavies* is a surgeon and apothecary in Westminster, and a very old intimate of Dr. Golding. He did not attend the first two meetings, at which principally the question relating to Mr. Howship and myself was investigated; yet he appears to have been at the divisions upon the same. It may, perhaps, be contended that the minutes would afford him the necessary information to form his opinion. It is no such thing; they were *mutilated*, and so thoroughly imperfect that a protest of Dr. Sigmond and myself was directed to be entered against them.

7. *Mr. Wood*, a currier in Newport Street, is another intimate and patient of Dr. Golding. He attended all the meetings.

8. *Mr. Canton* is the dentist in St. Martin's Lane, an old and very intimate friend of Dr. Golding. He stands in the list as Dentist of the Institution; if so, he is an officer, and surely therefore ought not to have been a member of such a Committee.

9. *Mr. Cawthorn.*—This gentleman's name does not appear in the printed list of Governors, but I find that he was made an Honorary Governor by the Committee on the 2d July, 1836, when Mr. Everth, also an Honorary Governor, was in the chair, and the other persons present were Mr. Canton, Dr. Golding, and the Honorary Secretary. He is said to have assisted much at the late Musical Festival, and therefore made a Life-Governor. Not one month, it will be seen, had elapsed from his being made a Governor; and at the very first meeting he could attend he is named to be a member of a Special Committee, when he must of necessity be quite ignorant of the affairs or condition of the Hospital, and certainly most indecently thrust forward to enquire into the character or conduct of its officers.

10. *Mr. Clarke is the brother-in-law of Dr. Golding.*

Here then is the Committee, and these gentlemen all named by Dr. Golding and Mr. Robertson to sit in judgment upon the dissensions among the Medical Officers, to determine the characters of them, the management of the Hospital, and the condition of the drugs and the establishment altogether. It is a PACKED COMMITTEE, and a disgrace to those who nominated them. Well indeed might Dr. Sigmond and myself complain of their partiality and their partizanship; but they have carried it too far, the Governors at large can never submit to such a proceeding. It cannot be matter of astonishment that any decision to which they have arrived should be protested against, and it will be seen that they have not confined themselves to the subjects they were to embrace. They have held that the words so artfully introduced appoint them not only to take into consideration the dissensions among the officers and some circumstances affecting the well-being of the Hospital, but also give to them *full power to decide thereon,* entitle them to go the length they have done, and dispense with the services of two of the Professional Officers of the Hospital, and this too without appeal to the Board of Governors. I hereby solemnly protest against this gross tyranny and usurpation worthy only of the most despotic times. According to the laws (which have been most religiously kept in manuscript and never been printed for the information of the Governors), the General Court has paramount jurisdiction and authority over every thing connected with its laws, rules, &c. It is directed to be held on all important occasions for the consideration of *weighty matters,* election of officers, &c. The dismissal of any officer I contend is a weighty matter and must of necessity rest with the elective body—the Governors at large; and I am sure no body of independent Governors would for one moment think of vesting any such power in the hands of a few, nor would any few of proper feeling ever think of exercising such a power. Had a properly-constituted and unprejudiced Committee felt the circumstances brought under their notice to be such as to call for censure or any measure of severity, they would of course have represented to a Board the feelings that impressed them upon the enquiry, and have left to that Board the inflicting of any punishment, or at least have afforded to those who are destined to be the subjects of it a proper source of appeal. The proceeding is too gross and monstrous, and destroys itself. Here are the services of two gentlemen standing high as professional men and as teachers—one for a period of fourteen years, and the other of not much less—to be set aside by *eight* individuals (for that was the number present at the decision), relatives and intimates of parties concerned, *Honorary* Governors, &c. &c.,—their decision to be paramount to all other jurisdiction. Is this to be borne? Certainly not. *And I therefore call upon the Governors and the Subscribers, for they too must raise their voices to assist me in unmasking this infamous job, and placing the Charity upon the only true and honest basis on which it can stand, if it is to do justice to the intentions of its supporters and the demands of the public. I will incessantly labour until this be accomplished; and I beg therefore of all who read this Address to forward to me their names, if they feel disposed to co-operate in any way with me in effecting this good and essential work.*

The enquiry made by the Committee into the gross mismanagement of Dr. Golding and the Honorary Secretary has been most imperfectly gone into—not a nurse of the Wards, or a Pupil, or a Patient has been examined to verify or disprove the statements brought forward by Dr. Sigmond and myself. We have fully shown, and we can bring a host of credible witnesses to prove the facts alleged, and to show a mismanagement far beyond what it is possible to conceive could really exist. The want of bandages, splints, tourniquets, and other instruments, I have already noticed. The arrangement and appointment of servants in the building are not less to be censured. There is at this time a cook who does not understand the dressing of meat, and who was brought into the hospital for a cut throat inflicted by herself. We have had drunken nurses, an epileptic patient even made a nurse, though by an Act of Parliament that is a disease not permitted to be admitted into any Hospital. And, in short, look to whatever department you will, abundant matter for correction will present itself.

The Honorary Secretary—and this Officer is a downright curse to all Institutions; for when a man performs his duty he ought to be paid, and we are able to pay a Secretary, and then he would be always at his post to reply to enquiries; whereas the present one is a clerk in a public office, and therefore unable to be present except after certain hours, when persons are least likely to apply at the Hospital for information. And this Honorary Secretary I find is really, according to a vote of the Committee, though I do not perceive that it has received the sanction of a General Court, nor is he printed in such a capacity, but he is, according to a vote of the Committee, the Sub-Treasurer,* and is empowered to sign all cheques as such. Mr. Drummond consented to take upon himself the office of Treasurer, but wished not to take an active part in the duties of signing cheques, and the Rev. Dr. Richards, the other Treasurer, has removed from the neighbourhood, and unfortunately, from age and infirmities, unable to give his assistance in the proceedings, or be present at any of the meetings; so that this duty of signing the cheques devolves upon the Honorary Secretary. This resolution emanated from a Committee, at which only two members were present besides Dr. Golding and the Honorary Secretary himself.†

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* *Query.*—What General Court created such an Officer?

† The following is a statement of attendances at the Committee Meetings for one year:—

Oct. 25, 1834, Two Members present, besides Dr. Golding and the Hon. Sec.
Dec. 28, „ Two Members, Dr. Golding, the Hon. Sec., and Dr. Shearman.
Jan. 31, 1835, One Member, Dr. Golding, the Sec. and Dr. Shearman.
April 25, „ Ditto, Dr. Golding, Dr. Shearman, and the Sec.
July 25, „ Two Members, Dr. Golding and Dr. Shearman.

Making an attendance of eight Members (but only five individuals) of the Committee in the year, and this year the first of its operation as a Hospital!

Now I contend that all these matters, and a multiplicity of others I could name, do need the interference of the Governors, and the establishment of a Board to conduct the proceedings of the Hospital. For this Board, to meet weekly, Dr. Sigmond and myself have most fruitlessly contended ; and it was not until the last General Meeting, when, knowing from our repeated communications that we intended to urge it, it was introduced as a recommendation in the Report. I congratulated the Meeting upon it, as a means of correcting abuses that had existed, and I trusted to its sparing me the unpleasant detail I have made; but I soon saw, from the opposition with which a proposition I made was met, that this hope was without foundation. I proposed that the Board should not be restricted to the members of the Committee (twelve in number), inviting only the Patrons and Vice-Patrons—persons who, from their situation in life and their other duties, could not possibly be expected to attend at such meetings, to look to the articles of diet (all of which are now ordered by Dr. Golding, and not contracted for by a Committee as in all other Institutions,) to examine the wards of the Hospital, to see into the condition of the patients, to admit and to dismiss them, to ascertain how far they were satisfied with their treatment whilst within its walls, &c. &c.; and I proposed that it should be open to every annual Subscriber of Four Guineas, which entitles to the admission of In-patients. No; I could not carry this. Will it be credited that at the General Meeting there was not even an individual to second it ? For Dr. Sigmond, having become an officer of the Hospital at a period posterior to myself, is by a law deprived of the right of becoming a Governor, whatever may be the amount he may please to subscribe. However, I did obtain an assent that any Life-Governor might be present; but this is too great a restriction for the purposes of the charity. If its influence is to be increased, if the number of its supporters is to be augmented, the Board must be thrown open to the Subscribers. The exertions of active members will thus be obtained, and their exertions are paramount to all pecuniary consideration.

I shall here close this Address; and I trust that I have fully shown that the Charing Cross Hospital has been subjected to exceedingly bad management, and that there are many abuses to correct. I trust I have also successfully vindicated my own character, and that I may safely defy the slander of the world and the machinations of artful and wicked men, who have attempted to cast a stain upon my honour, to promote their own base and tyrannical views. I rely with the greatest confidence on the opinion which shall be formed by the Governors, and the Subscribers, and the Members of my own Profession, upon the perusal of this hastily written address, which has been hurried to a degree quite painful to my feelings, as being injurious to its full and proper effect; but I could not lose a moment in endeavouring to remove any suspicion or imputation that might be supposed to rest upon my character.

T. J. PETTIGREW.

Saville Row, August 22d, 1836.

P. S.—I deem it needless to notice the various personal annoyances to which I have been subjected, or the means resorted to, to check my desire to comply with the regulations of the Royal College of Surgeons. There has never been any thing like the complement of patients required since the recognition of the Hospital was obtained. Future opportunities will doubtless offer for considering this matter.

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USE OF THE DEAD TO THE LIVING.

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BY

SOUTHWOOD SMITH, M.D.

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AND ON FORENSIC MEDICINE.

THIRD EDITION.

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USE OF THE DEAD TO THE LIVING.

Every one desires to live as long as he can. Every one values health "above all gold and treasure." Every one knows that, as far as his own individual good is concerned, protracted life and a frame of body sound and strong, free from the thousand pains which flesh is heir to, are unspeakably more important than all other objects, because life and health must be secured before any possible result of any possible circumstance can be of consequence to him. In the improvement of the art which has for its object the preservation of health and life, every individual is, therefore, deeply interested. An enlightened physician and a skilful surgeon, are in the daily habit of administering to their fellow men more real and unquestionable good, than is communicated, or communicable, by any other class of human beings to another. Ignorant physicians and surgeons are the most deadly enemies of the community: the plague itself is not so destructive: its ravages are at distant intervals, and are accompanied with open and alarming notice of its purpose and power; theirs are constant, silent, secret; and it is while they are looked up to as saviours, with the confidence of hope, that they give speed to the progress of disease, and certainty to the stroke of death.

It is deeply to be lamented that the community, in general, are so entirely ignorant of all that relates to the art and the science of medicine. An explanation of the functions of the animal economy; of their most common and important deviations from a healthy state; of the remedies best adapted to restore them to a sound condition, and of the mode in which they operate, as far as that is known, ought to form a part of every course of liberal education. The profound ignorance of the people on all these subjects is attended with many disadvantages to themselves, and operates unfavorably on the medical character. In consequence of this want of information, persons neither know what are the attainments of the man in whose hands they place their life, nor what they ought to be; they can neither form an opinion of the course of education which it is incumbent upon him to follow, nor judge of the success with which he has availed himself of the means of knowledge which have been afforded him. There is one branch of medical education in particular, the foundation, in fact, on which the whole superstructure must be raised, the necessity of which is not commonly understood, but which requires only to be stated to be perceived. Perhaps it is impossible to name any one subject which it is of more importance that the community should understand. It is one in which every man's life is deeply implicated: it is one on which every man's ignorance or information will have some influence. We shall, therefore, show the kind of knowledge which it is indispensable that the physician and the surgeon should possess: we shall illustrate, by a reference to particular cases, the reason why knowledge of this kind cannot be dispensed with: and we shall explain, by a statement of facts, the nature and extent of the obstacles which at present oppose the acquisition of this knowledge. We repeat there is no subject in which every reader can be so immediately and deeply interested, and we trust that he will give us his calm and unprejudiced attention.

The basis of all medical and surgical knowledge is anatomy. Not a single step can be made either in medicine or surgery, considered either as an art or a science, without it. This should seem self-evident, and to need neither proof nor illustration: nevertheless as it is useful occasionally to contemplate the evidence of important truth, we shall show why it is that there can be no rational medicine, and no safe surgery, without a thorough knowledge of anatomy.

Disease, which it is the object of these arts to prevent and to cure, is denoted by disordered function: disordered function cannot be understood without a knowledge of healthy function; healthy function cannot be understood without a knowledge of structure; structure cannot be understood unless it be examined.

The organs on which all the important functions of the human body depend are concealed from the view. There is no possibility of ascertaining their situation and connections, much less their nature and operation, without inspecting the interior of this curious and complicated machine. The results of the mechanism are visible: the mechanism itself is concealed, and must be investigated to be perceived. The operations of nature are selmon entirely hidden from the human eye; still less are they obtruded upon it, but over the most curious and wonderful operations of the animal economy so thick a veil is drawn, that they never could have been perceived without the most patient and minute research. The circulation of the blood, for example, never could have been discovered without dissection. Notwithstanding the partial knowledge of anatomy which must have been acquired by the accidents to which the human body is exposed, by attention to wounded men, by the observance of bodies killed by violence; by the huntsman in using his prey; by the priest in immolating his victims; by the augur in pursuing his divinations; by the slaughter of animals; by the dissection of brutes; and even occasionally by the dissection of the human body, century after century passed away, without a suspicion having been excited of the real functions of the two great systems of vessels, arteries, and veins. It was not until the beginning of the 17th century, when anatomy was ardently cultivated, and had made considerable progress, that the valves of the veins and of the heart were discovered, and, subsequently, that the great Harvey, the pupil of the anatomist who discovered the latter, by inspecting the structure of these valves; by contemplating their disposition; by reasoning upon their use, was led to suspect the course of the blood, and afterwards to demonstrate it. Several systems of vessels in which the most important functions of animal life are carried on, the absorbent system, for example, and even that portion of it which receives the food after it is digested, and which conveys it into the blood, are invisible to the naked eye, except under peculiar circumstances: whence it must be evident, not only that the interior of the human body must be laid open, in order that its organs may be seen; but that these organs must be minutely and patiently dissected, in order that their structure may be understood.

The most important diseases have their seat in the organs of the body: an accurate acquaintance with their situation is, therefore, absolutely necessary, in order to ascertain the seats of disease; but for the reasons already assigned, their situation cannot be learnt, without the study of anatomy. In several regions, organs the most different in structure and function are placed close to each other. In what is termed the epigastric region, for example, are situated the stomach, the liver, the gall bladder, the first portion of the small intestine, the duodenum, and a portion of the large intestine, the colon; each of these organs is essentially different in structure and in use, and is liable to distinct diseases. Diseases, the most diversified, therefore, requiring the most opposite treatment, may exist in the same region of the body; the discrimination of which is absolutely impossible, without that knowledge which the study of anatomy alone can impart.

The seat of pain is often at a great distance from that of the affected organ. In disease of the liver, pain is generally felt at the top of the right shoulder. The right phrenic nerve sends a branch to the liver: the third cervical nerve, from which the phrenic arises, distributes numerous branches to the neighbourhood of the shoulder: thus is established a nervous communication between the shoulder and the liver. This is a fact which nothing but anatomy could teach, and affords the explanation of a symptom which nothing but anatomy could give. The knowledge of it would infallibly correct a mistake into which a person who is ignorant of it would be sure to fall: in fact, persons ignorant of it do constantly commit the error. We have known several instances in which organic disease of the liver has been considered, and treated as rheumatism of the shoulder. In each of these cases, disease in a most important organ might have been allowed to steal on isidiously until it became incurable: while a person, acquainted with anatomy, would have detected it at once, and cured it without difficulty. Many cases have occurred of persons who have been supposed to labour under disease of the liver, and who have been treated accordingly: on examination after death, the liver has been found perfectly healthy, but there has been discovered extensive disease of the brain. Disease of the liver is often mistaken for disease of the lungs: on the other hand, the lungs have been found full of ulcers, when they were supposed to have been perfectly sound, and when every symptom was referred to disease of the liver. Persons are constantly attacked with convulsions, children especially; convulsions are spasms: spasms, of course, are to be treated by antispasmodics. This is the notion amongst people ignorant of medicine: it is the notion amongst old medical men: it is the notion amongst half-educated young ones. All this time these convulsions are merely a symptom; that symptom depends upon and denotes, most important disease in the brain: the only chance of saving life, is the prompt and vigorous application of proper remedies to the brain; but the practitioner whose mind is occupied with the symptom, and who prescribes antispasmodics, not only loses the time in which alone any thing can be done to snatch the victim from death, but by his remedies absolutely adds fuel to the flame which is consuming his patient. In disease of the hip-joint pain is felt, not in the hip, but, in the early stage of the disease, at the knee. This also depends on nervous communication. The most dreadful consequences daily occur from an ignorance of this single fact. In all these cases error is inevitable, without a knowledge of anatomy: it is scarcely possible with it: in all these cases error is fatal: in all these cases anatomy alone can prevent the error, anatomy alone can correct it. Experience, so far from leading to its detection, would only establish it in men's minds, and render its removal impossible. What is called experience is of no manner of use to an ignorant and unreflecting practitioner. In nothing does the adage, that it is the wise only who profit by experience, receive so complete an illustration as in medicine. A man who is ignorant of certain principles, and who is incapable of reasoning in a certain manner, may have daily before him, for fifty years, cases affording the most complete evidence of the truth of those principles, and of the importance of the deduction to which they lead, without observing the one, or deducing the other. Hence the most profoundly ignorant of medicine are often the oldest members of the profession, and those who have had the most extensive practice. A medical education, founded on a knowledge of anatomy, is, therefore, not only indispensable to prevent the most fatal errors, but to enable a person to obtain advantage from those sources of improvement which extensive practice may open to him.

To the surgeon, anatomy is eminently what Bacon has so beautifully said knowledge in general is: it is power—it is power to lessen pain, to save life, and to eradicate diseases, which, without its aid, would be incurable and fatal. It is impossible to convey to the reader a clear conception of this truth, without a reference to particular cases; and the subject is one of such extreme importance, that it may be worth while to direct the attention for a moment to two or three of the capital diseases which the surgeon is daily called upon to treat. Aneurism, for example, is a disease of an artery, and consists of a preternatural dilatation of its coats. This dilatation arises from debility of the vessel, whence, unable to resist the impetus of the blood, it yields, and is dilated into a sac. When When once the disease is induced, it commonly goes on to increase with a steady and uninterrupted progress, until at last it suddenly bursts, and the patient expires either instantaneously from loss of blood, or by degrees from repeated losses. When left to itself, it almost uniformly proves fatal in one or other of these modes; yet, before the time of Galen, no notice was taken of this terrible malady. The ancients, indeed, who believed that the arteries were air tubes, could have had no conception of the existence of an aneurism. Were the number of individuals in Europe, who are now annually cured of aneurism, by the interference of art, to be assumed as the basis of a calculation of the number of persons who must have perished by this disease, from the beginning of the world to the time of Galen, it would convey some conception of the extent to which anatomical knowledge is the means of saving human life.

The only way in which it is possible to cure this disease is, to produce an obliteration of the cavity of the artery. This is the object of the operation. The diseased artery is exposed, and a ligature is passed around it, above the dilatation, by means of which the blood is prevented from flowing into the sac, and inflammation is excited in the vessel; in consequence of which its sides adhere together, and its cavity becomes obliterated. The success of the operation depends entirely on the completeness of the adhesion of the sides of the vessel, and the consequent obliteration of its cavity. This adhesion will not take place unless the portion of the artery to which the ligature is applied be in a sound state. If it be diseased, as it almost always is, near the seat of the aneurism, when the process of nature is completed by which the ligature is removed, hemorrhage takes place, and the patient dies just as if the aneurism had been left to itself. For a long time the ligature was applied as close as possible to the seat of the aneurism: the aneurismal sac was laid open in its whole extent, and the blood it contained was scooped out. The consequence was, that a large deep-seated sore, composed of parts in an unhealthy state, was formed: it was necessary to the cure that this sore should suppurate, granulate, and heal: a process which the constitution was frequently unable to support. Moreover, there was a constant danger that the patient would perish from hemorrhage, through the want of adhesion of the sides of the artery. The profound knowledge of healthy and of diseased structure, and of the laws of the animal economy by which both are regulated, which John Hunter had acquired from anatomy, suggested to this eminent man a mode of operating, the effect of which, in preserving human life, has placed him high in the rank of the benefactors of his race. This consummate anatomist saw, that the reason why death so often followed the common operation was, because that process which was essential to its success was prevented by the diseased condition of the artery. He perceived that the vessel, at some distance from the aneurism, was in a sound state; and conceived that, if the ligature were applied to this distant part, that is, to a sound instead of a diseased portion of the artery, this necessary process would not be counteracted. To this there was one capital objection, that it would often be necessary to apply the ligature around the main trunk of an artery, before it gives off its branches, in consequence of which the parts below the ligature would be deprived of their supply of blood, and would therefore mortify. So frequent and great are the communications between all the arteries of the body, however, that he thought it probable, that a sufficient supply would be borne to these parts through the medium of collateral branches. For an aneurism in the ham, he, therefore, boldly cut down upon the main trunk of the artery which supplies the lower extremity; and applied a ligature around it, where it is seated near the middle of the thigh, in the confident expectation that, though he thus deprived the limb of the supply of blood which it received through its direct channel, it would not perish. His knowledge of the processes of the animal economy led him to expect that the force of the circulation being thus taken off from the aneurismal sac, the progress of the disease would be stopped; that the sac itself, with all its contents, would be absorbed; that by this means the whole tumour would be removed, and that an opening into it would be unnecessary. The most complete success followed this noble experiment, and the sensations which this philosopher experienced when he witnessed the event, must have been exquisite, and have constituted an appropriate reward for the application of profound knowledge to the mitigation of human suffering. After Hunter followed Abernethy, who, treading in the footsteps of his master, for an aneurism of the femoral, placed a ligature around the external iliac artery; lately the internal iliac itself has been taken up, and surgeons have tied arteries of such importance, that they have been themselves astonished at the extent and splendour of their success. Every individual on whom an operation of this kind has been successfully performed, is snatched by it from certain and inevitable death!

The symptom by which an aneurism is distinguished from every other tumour is, chiefly, its pulsating motion. But when an aneurism has become very large, it ceases to pulsate; and when an abscess is seated near an artery of great magnitude, it acquires a pulsating motion; because the pulsations of the artery are perceptible through the abscess. The real nature of cases of this kind cannot possibly be ascertained, without a most careful investigation, combined with an exact knowledge of the structure and relative position of all the parts in the neighbourhood of the tumour. Pelletan, one of the most distinguished surgeons of France, was one day called to a man, who, after a long walk, was seized with a severe pain in the leg, over the seat of which appeared a tumour, which was attended with a pulsation so violent that it lifted up the hand of the examiner. There seemed every reason to suppose that the case was an aneurismal swelling. This acute observer, however, in comparing the affected with the sound limb, perceived in the latter a similar throbbing. On careful examination he discovered that, by a particular disposition in this individual, one of the main arteries of the leg (the anterior tibial) deviated from its usual course, and instead of plunging deep between the muscles, lay immediately under the skin and fascia. The truth was, that the man in the exertion of walking had ruptured some muscular fibres, and the uncommon distribution of the artery gave to this accident these peculiar symptoms. The real nature of this case could not possibly have been ascertained, but by an anatomist. The same surgeon has recorded the case of a man, who, having fallen twice from his horse, and experienced for several years considerable uneasiness in his back, was at length afflicted with acute pain in the abdomen. At the same time an oval, irregularly circumscribed tumour made its appearance in the right flank. It presented a distinct fluctuation, and had all the appearance of a collection of matter depending on caries of the vertebræ. The pain was seated chiefly at the lower portion of that part of the spine which forms the back, which was, moreover, distorted; and this might have confirmed the opinion that the case was a lumbar abscess with caries. Pelletan, however, who well knew that an aneurism, as it enlarges, may destroy any bone in its neighbourhood, saw that the disease was an aneurism, and predicted that the patient must perish. On opening the body (for the man lived only ten days after Pelletan first saw him) an aneurismal tumour was discovered, which nearly filled the cavity of the abdomen. If this case had been mistaken for lumbar abscess, and the tumour had been opened with a view of affording an exit to the matter, the man would have died in a few seconds. There is no surgeon of discernment and experience whose attention has not been awakened, and whose sagacity has not been put to the test, by the occurrence of similar cases in his own practice. The consequence of error is almost always instantaneously fatal. The catalogue of such disastrous events is long and melancholy. Richerand has recorded, that Ferrand, head surgeon of the Hotel-Dieu, mistook an aneurism in the armpit for an abscess; plunged his knife into the swelling, and killed the patient. De Haen speaks of a person who died in consequence of an opening which was made, contrary to the advice of Boerhaave in a similar tumour at the knee. Vesalius was consulted about a tumour in the back, which he pronounced to be an aneurism; but an ignorant practitioner having made an opening into it, the patient instantly bled to death. Nothing can be more easy than to confound an aneurism of the artery of the neck with a swelling of the glands in its neighbourhood: with a swelling of the cellular substance which surrounds the artery; with abscesses of various kinds; but if a surgeon were to fall into this error, and to open a carotid aneurism, his patient would certainly be dead in the space of a few moments. It must be evident, then, that a thorough knowledge of anatomy is not only indispensable to the proper treatment of cases of this description, but also to the prevention of the most fatal mistakes.

There is nothing in surgery of more importance than the proper treatment of hemorrhage. Of the confusion and terror occasioned by the sight of a human being, from whom the blood is gushing in torrents, and whose condition none of the spectators is able to relieve, no one can form an adequate conception, but those who have witnessed it. In all such cases there is one thing proper to be done, the prompt performance of which is generally as certainly successful, as the neglect of it is inevitably fatal. It is impossible to conceive of a more terrible situation than that of a medical man who knows not what to do on such an emergency. He is confused; he hesitates: while he is deciding what measures to adopt, the patient expires: he can never think of that man's death without horror, for he is conscious that, but for his ignorance he might have averted his patient's fate. The ancient surgeons were constantly placed in this situation, and the dread inspired by it retarded the progress of surgery more than all other causes put together. Not only were they terrified from interfering with the most painful and destructive diseases, which experience has proved to be capable of safe and easy removal, but they were afraid to cut even the most trivial tumour. When they ventured to remove a part, impossible to exhibit a more striking illustration of the great value of anatomical knowledge.

But if there be any disease which, from the frequency of its occurrence, from the variety of its forms, from the difficulty of discriminating between it, and other maladies, and from the danger attendant on almost all its varieties, requires a combination of the most minute investigation, with the most accurate anatomical knowledge, it is that of hernia. This disease consists of a protrusion of some of the viscera of the abdomen, from the cavity in which they are naturally contained, into a preternatural bag, composed of the portion of the peritoneum (the membrane which lines the abdomen) which is pushed before them. It is computed that one sixteenth of the human race are afflicted with this malady. It is sometimes merely an inconvenient complaint, attended with no evil consequences whatever: but there is no form of this disease, which is not liable to be suddenly changed, and by slight causes, from a perfectly innocent state, into a condition which may prove fatal in a few hours. The disease itself occurs in numerous situations; it may be confounded with various diseases; it may exist in the most diversified states; it may require, without the loss of a single moment, a most important and delicate operation; and it may appear to demand this operation, while the performance of it may really be not only useless, but highly pernicious.

The danger of hernia depends on its passing into that state which is technically termed strangulation. When a protruded intestine suffers such a degree of pressure, as to occasion a total obstruction to the passage of its contents, it is said to be strangulated. The consequence of pressure thus producing strangulation is, the excitement of inflammation: this inflammation must inevitably prove fatal unless the pressure be promptly removed. In most cases this can be effected only by the operation. Two things, then, are indispensable: first, the ability to ascertain that the symptoms are really produced by pressure, that is, to distinguish the disease from the affections which resemble it; and secondly, when this is effected, to perform the operation with promptitude and success. The distinction of strangulated hernia from affections which resemble it, often requires the most exact knowledge and the most minute investigation. The intestine included in a hernial sac may be merely affected with colic, and thus give rise to the appearance of strangulation. It may be in a state of irritation, produced, for example, by unusual fatigue; and from this cause may be attacked with the symptoms of inflammation. Inflammation may be excited in the intestine, by the common causes of inflammation, which the hernia may have no share in inducing, and of which it may not even participate. Were this case mistaken, and the operation performed, it would not only be useless, but pernicious: while the attention of the practitioner would be diverted from the real nature of the malady; the prompt and vigorous application of the remedies which alone could save the patient would be neglected, and he would probably perish. On the other hand, a very small portion of intestine may become strangulated, and urgently require the operation. But there may be no tumor; all the symptoms may be those, and, on a superficial examination, only those, of inflammation of the bowels. Were the real nature of this case mistaken, death would be inevitable. Nothing is more common than fatal errors of this kind. It is only a few months ago, that a physician was called in haste to a person who was said to be dying of inflammation of the bowels. Before he reached the house the man was dead. He had been ill only three days. On looking at the abdomen, there was a manifest hernia; the first glance was sufficient to ascertain the fact. The practitioner in attendance had known nothing of the matter; he had never suspected the real nature of the disease, and had made no inquiry which could have led to the detection of it. Here was a case which might probably have been saved, but for the criminal ignorance and inattention of the practitioner. Whenever there are symptoms of inflammation of the bowels, examination of the abdomen is indispensable; and the life of the patient will often depend on the care and accuracy with which the investigation is made.

But it is possible that inflammation may attack the parts included in the hernial sac, without arising from the hernia itself. The inflammation may be produced by the common causes of inflammation: there may be no pressure: there may be no strangulation: the swelling may be the seat, not the cause of the disease. In this case, too, the operation would be both useless and pernicious. Now all these are diversities which it is of the highest importance to discriminate. In some of them life depends on the clearness, accuracy, and promptitude, with which the discrimination is made. Promptitude is of no less consequence than accuracy. If the decision be not formed and acted on at once, it will be of no avail. The rapidity of the progress of this disease is often frightful. We have mentioned a case in which it was fatal in three days, but it not unfrequently terminates fatally in less than twenty-four hours. Sir Astley Cooper mentions a case in which the patient was dead in eight hours after the commencement of the disease. Larrey has recorded the case of a soldier in whom a hernia took place, which was strangulated immediately. He was brought to the "ambulance" instantly, and perished in two hours with gangrene of the part, and of the abdominal viscera. This was the second instance which had occurred to this surgeon of a rapidity thus appalling. What clearness of judgment, what accuracy of knowledge, what promptitude of decision, are necessary to treat such a disease with any chance of success!

The moment that a case is ascertained to be strangulated hernia, an attempt must be made to liberate the parts from the stricture, and to replace them in their natural situation. This is first attempted by the hand, and the operation is technically termed the *taxis*. The patient must be placed in a particular position; pressure must be made in a particular direction; it is impossible to ascertain either, without an accurate knowledge of the structure of the parts. If pressure be made in a wrong direction, and in a rough and unscientific manner, the organs protruded instead of being urged through the proper opening are bruised against the parts which oppose their return. Many cases are on record, in which gangrene and even rupture of the intestine have been occasioned in this manner. When the parts cannot be returned by the hand, assisted by those remedies which experience has proved to be beneficial, the operation must be performed without the delay of a moment. To its proper performance two things are necessary. First, a minute anatomical knowledge of the various and complicated parts which are implicated in it; and secondly, a steady, firm, and delicate command of the knife. In the first place, the integuments must be divided; the cellular substance which intervenes between the skin and the hernial sac must be removed, layer by layer, with the knife and the dissecting forceps; the sac itself must be opened: this part of the operation must be performed with the most extreme caution: the sac being laid open, the protruded organs are now exposed to view. The operator must next ascertain the exact point where the stricture exists; having discovered its seat, he must make his incision with a particular instrument, in a certain direction, to a definite extent. On account of the nature of the parts implicated in the operation, and the proximity of important vessels, life depends on an exact knowledge and a precise and delicate attention to all these circumstances. How can this knowledge be obtained, how can this dexterity be acquired without a profound acquaintance with anatomy, and how can this be acquired without frequent and laborious dissection? The eye must become familiar with the appearance of the integuments, with the appearance of the cellular substance beneath it, with the appearance of the hernial sac, and of the changes which it undergoes by disease; with the appearance of the various viscera contained in it, and of their changes; and the hand must pay that steady and prompt obedience to the judgment which nothing but knowledge and the consciousness of knowledge can command. Even this is not all. When the operation has been performed thus far with perfect skill and success, the most opposite measures are required according to the actual state of the organs contained in the sac. If they are agglutinated together, if portions of them are in a state of mortification, to return them into the cavity of the abdomen in that condition would in general be certain death. Preternatural adhesion must be removed; mortified portions must be cut away: but how can this possibly be done without an acquaintance with healthy and diseased structure, and how can this be obtained without dissecting the organs in a state of health and of disease?

It has been stated that the progress of strangulated hernia to a fatal termination is often frightfully rapid; in certain cases to delay the operation, even for a very short period, is, therefore, to lose the only chance of success. But ignorant and half-informed surgeons are afraid to operate. They are conscious that the operation is one of immense importance: they know that in the hands of an operator ignorant of anatomy, it is one of extreme hazard: they therefore put off the time as long as possible: they have recourse to every expedient: they resort to every thing but the only efficient remedy, and when at last they are compelled by a secret sense of shame to try that, it is too late. All the best practical surgeons express themselves in the strongest language on the importance of performing the operation early, if it be performed at all. On this point there is a perfect accordance between the most celebrated practitioners on the continent, and the great surgeons of our own country: all represent, in many parts of their writings, the dangerous and fatal effects of delay. Mr. Hey in his Practical Observations, states that when he first began practice, he considered the operation as the last resource, and only to be employed when the danger appeared imminent. "By this dilatory mode of practice," says he, "I lost three patients in five, upon whom the operation was performed. Having more experience of the urgency of the disease, I made it my custom when called to a patient who had laboured two or three days under the disease, to wait only about two hours, that I might try the effect of bleeding (if that evacuation was not forbidden by some peculiar circumstance of the case) and the tobacco clyster. In this mode of practice I lost about two patients in nine, upon whom I operated. This comparison is drawn from cases nearly similar, leaving out of the account those cases in which gangrene of the intestine had taken place. I have now, at the time of writing this, performed the operation thirty-five times; and have often had occasion to lament that I performed it too late, but never that I had performed it too soon."

These observations are sufficient to show the importance of anatomy in certain surgical diseases. The state of medical opinion, from the earliest ages to the present time, furnishes a most instructive proof of its necessity to the detection and cure of disease in general. The doctrines of the father of physic were in the highest degree vague and unmeaning. Every thing is resolved by Hippocrates into a general principle, which he terms nature; and to which he ascribes intelligence; which he clothes with the attribute of justice; and which he represents as possessing virtues and powers which he says are her servants, and by means of which she performs all her operations in the bodies of animals, distributes the blood, spirits, and heat, through all the parts of the body, and imparts to them life and sensation. He states that the manner in which she acts, is by attracting what is good or agreeable to each species, and retaining, preparing, and changing it: or, on the other hand, by rejecting whatever is superfluous or hurtful, after she has separated it from the good. This is the foundation of the doctrine of depuration, concoction, and crisis in fevers, so much insisted on by him and by other physicians after him; but when he explains what he means by nature, he resolves it into heat, which he says appears to have something immortal in it.

The great opponent of Hippocrates was Asclepiades. He asserted that matter, considered in itself, is of an unchangeable nature: that all perceptible bodies are composed of a number of small ones, termed corpuscles, between which there are interspersed an infinity of small spaces totally void of matter: that the soul itself is composed of these corpuscles: that what is called nature is nothing more than matter and motion: that Hippocrates knew not what he said when became capable of assimilation; that this governor of the stomach, this *spiritus vitæ,* this astral body of man, was the immediate cause of all diseases and the chief agent in their cure; that each member of the body had its peculiar stomach, by which the work of secretion was effected; that diseases were produced by certain influences, of which there were five in particular, viz. *ens estrale, ens veneni, ens naturale, ens spirituale,* and *ens deale;* that when the Archeus was sick, putrescence was occasioned, and that either *localiter* or *emunctorialiter,* &c. &c.

It would be leading to a detail which is incompatible with our present purpose, to follow these speculations, or to give an account of the doctrines of the mechanical physicians, who believed that every operation of the animal economy was explained by comparing it to a system of ropes, levers, and pulleys, united with a number of rigid tubes of different lengths and diameters, containing fluids which from variations in their impelling causes, moved with different degrees of velocity: or of the chemical physicians, whose manner of theorizing and investigating would have qualified them better for the occupation of the brewer or of the distiller than for that of the physician. All these speculations are idle fancies, without any evidence whatever to support them; and it has been argued that, for this very reason, they must have been without any practical result, and that, therefore, if they were productive of no benefit, they were, at least, innoxious. No opinion can be more false or pernicious. These wretched theories not only pre-occupied the mind, prevented it from observing the real phenomena of health and of disease, and the actual effect of the remedies which were employed, and thus put an effectual stop to the progress of the science; but they were productive of the most direct and serious evils. It is no less true in medicine than in philosophy and morals, that there is no such thing as innoxious error; that men's opinions invariably influence their conduct; and that physicians, like other men, act as they think. Asclepiades, whose mind was full of corpuscles and interstices, was intent on finding suitable remedies, which he discovered in gestation, friction, and the use of wine. By various exercises he proposed, to render the pores more open, and to make the juices and corpuscles, the retention of which causes disease, to pass more freely. Hence he used gestation from the very beginning of the most burning fevers. He laid it down as a maxim that one fever was to be cured by another; that the strength of the patient was to be exhausted by making him watch and endure thirst, to such a degree, that for the first two days of the disorder he would not allow them to cool their mouths with a drop of water. Abernethy's regulated diet is luxurious living compared to his plan of abstinence. For the three first days he allowed his patients no aliment whatever; on the fourth, he so far relented as to give to some of them a small portion of food: but from others he absolutely withheld all nourishment till the seventh day. And this is the gentleman who laid it down as a maxim that all diseases are to be cured "*Tuto, celeriter et jucunde.*" To be sure he was a believer in the doctrine of compensation; and in the latter stage of their diseases endeavoured to recompense his patients for the privations he caused them to endure in the beginning of their illness. Celsus observes that though he treated his patients like a butcher during the first days of the disorder, he afterwards indulged them so far as to give directions for making their beds in the softest manner. He allowed them abundance of wine which he gave freely in all fevers; he did not forbid it even to those afflicted with phrenzy; nay, he ordered them to drink it till they were intoxicated; for, said he, it is absolutely necessary that persons who labour under phrenzy should sleep, and wine has a narcotic quality. To lethargic patients he prescribed it with great freedom, but with the opposite purpose of rousing them from their stupor. His great remedy in dropsy was friction, which, of course, he employed to open the pores. With the same view he enjoined active exercise to the sick; but what is a little extraordinary, he denied it to those in health.

Erisistratus, who was a great speculator, and whose theories had the most important influence on his practice, banished bloodletting altogether from medicine, for the following notable reasons: because, he says, we cannot always see the vein we intend to open; because we are not sure we may not open an artery instead of a vein; because we cannot ascertain the true quantity to be taken; because if we take too little, the intention is not answered; if too much, we may destroy the patient; and because the evacuation of the venous blood is succeeded by that of the spirits, which thus pass from the arteries into the veins; wherefore, bloodletting ought never to be used as a remedy in disease. Yet, though he was thus cautious in abstracting blood, it must not be supposed that he was not a sufficiently bold practitioner. In tumour of the liver, he hesitated not to cut open the abdomen, and to apply his medicines immediately to the diseased organ; but though he took such liberties with the liver, he regarded with the greatest apprehension the operation of tapping in dropsy of the abdomen: because, said he, the waters being evacuated, the liver which is inflamed and become hard like a stone, is more pressed by the adjacent parts, which the waters kept at distance from it, whence the patient dies.

One physician conceived that gout originated from an effervescence of the synovia of the joints with the vitriolated blood: whence he recommended alcohol for its cure: a remedy for which the court of aldermen ought to have voted him a medal. A more ancient practitioner, who believed that the finger of St. Blasius was very efficacious "for removing a bone which sticks in the throat," maintained that gout was the "grand drier," and prescribed a remedy for it, which the patient was to use for a whole year, and to observe the following diet each month: in September, he must eat and drink milk; in October, he must eat garlic; in November, he is to abstain from bathing; in December, he must eat no cabbage; in January, he is to take a glass of pure wine in the morning; in February, to eat no beef; in March, to mix several things both in eatables and drinkables; in April, not to eat horseradish; nor, in May the fish called Polypus; in June he is to drink cold water in the morning; in July, to avoid venery; and, lastly, in August to eat no mallows.

A third physician deduced all diseases from inspissation of the fluids; hence he attached the highest importance to diluent drinks, and believed that tea, especially, is a sovereign remedy in almost every disease to which the human frame is subject: "tea," says Bentakoe, who is loudest in his praises of this panacea, and who, as Blumenback observes, "deserved to have been pensioned by the East India Company for his services,"—"tea is the best, nay, the only remedy for correcting viscidity of the blood, the source of all diseases, and for dissipating the acid of the stomach, as it contains a fine oleaginous volatile salt, and certain subtile spirits which are analogous in their nature to the animal spirits. Tea fortifies the memory and all the intellectual faculties: it will, therefore, furnish the most effectual means of improving physical education. Against fever there is no better remedy than forty or fifty cups of tea swallowed immediately after one another; the slime of the pancreas is thus carried off."

Another physician derived all diseases from a redundancy or deficiency of fire or water. He maintained that where the water predominated the fluids became viscid, and that hence arose intermittent fevers and anthritic complaints. His remedies are in strict conformity to his theory. These diseases are to be cured by volatile salts, which abound with fiery particles; venesection in any case is highly pernicious; these fiery medicines are the only efficacious remedies, and are to be employed even in diseases of the most inflammatory nature. "Life," says Dr. Brown, "is a forced state;" it is a flame kept alive by excitement; every thing stimulates; some substances too violently; others not sufficiently; there are thus two kinds of debility, indirect and direct, and to one or other of these causes must be referred the origin of all diseases. According to this doctrine the mode of cure is simple: we have nothing to do but to supply, to moderate, or to abstract stimuli. Typhous fever, in this system, is a disease of extreme debility: we must therefore give the strongest stimulants. Consumption and apoplexy, also, are diseases of debility; of course the remedies are active stimulants. Humanity shudders, and with reason, at the application of such doctrines to practice. And not less destitute of reason, and not less dangerous in practice, is the great doctrine of debility promulgated by Cullen. This celebrated professor taught that the circumstance which invariably characterized fever, that which constituted its essence, was debility. The inference was obvious, that, above all things, the strength must be supported. The consequence was, that bloodletting was neglected, and that bark and wine were given in immense quantities, in cases in which intense inflammation existed. The practice was in the highest degree mortal; the number of persons who have perished in consequence of this doctrine is incalculable. So far then is it from being true that medical theories are of no practical importance, that there is the closest possible connection between the speculations of the physician in his closet, and the measures which he adopts at the bedside of his patient. Truth to him is a benignant power which stops the progress of disease, protracts the duration of life, and mitigates the suffering it may be unable to remove: error is a fearfully active and tremendously potent principle. There is not a medical prejudice which has not slain its thousands, nor a false theory which has not immolated its tens of thousands. The system of medicine and surgery which is established in any country, has a greater influence over the lives of its inhabitants than the epidemic diseases produced by its climate, or the decisions of its government concerning peace and war. The devastations of the yellow fever will bear no comparison with the ravages committed by the Brunonian system; and the slaughter of the field of Waterloo counts not of victims, a tithe of the number of which the Cullenian doctrine of debility can justly boast. Anatomy alone will not teach a physician to think, much less to think justly; but it will give him the elements of thinking; it will furnish him with the means of correcting his errors; it will certainly save him from some delusions, and will afford to the public the best shield against his ignorance, which may be fatal, and against his presumption, which may be devastating.

We have entered into this minute detail at the hazard, we are aware, of tiring the reader; but in the hope of leaving on his mind a more distinct impression of the importance of anatomical knowledge than could possibly be produced by a mere allusion to the circumstances which have been explained. In all ages formidable obstacles have opposed the prosecution of anatomical investigations. Among these, without doubt, the most powerful has its source in a feeling which is natural to the heart of man. The sweetest, the most sacred associations are indissolubly connected with the person of those we love. It is with the corporeal frame that our senses have been familiar: it is that on which we have gazed with rapture: it is that which has so often been the medium of conveying to our hearts the thrill of ecstacy. We cannot separate the idea of the peculiarities and actions of a friend from the idea of his person. It is for this reason that "every thing which has been associated with him acquires a value from that consideration; his ring, his watch, his books, and his habitation. The value of these as having been his is not merely fictitious; they have an empire over my mind; they can make me happy or unhappy; they can torture and they can tranquillize; they can purify my sentiments and make me similar to the man I love; they possess the virtue which the Indian is said to attribute to the spoils of him he kills, and inspire me with the powers, the feelings, and the heart of their preceding master." It is nothing, the survivor may justly say, to tell me, when disease has completed its work, and death has seized its prey, that that body, with which are connected so many delightful associations, is a senseless mass of matter; that it is no longer my friend, that the spirit which animated it and rendered it lovely to my sight and dear to my affections, is gone. I know that it is gone. I know that I never more shall see the light of intelligence brighten that countenance, nor benevolence beam in that eye, nor the voice of affection sound from those lips: that which I loved, and which loved me, is not here; but here are still the features of my friend; this is his form, and the very particles of matter which compose this dull mass, a few hours ago were a real part of him, and I cannot separate them, in my imagination, from him. And I approach them with the profounder reverence: I gaze upon them with the deeper affection because they are all that remain to me. I would give all that I possess to purchase the art of preserving the wholesome character and rosy hue of this form that it might be my companion still: but this is impossible: I cannot detain it from the tomb: but when I have "cast a heap of mould upon the person of my friend and taken the cold earth for its keeper," I visit the spot in which it is deposited with awe: it is sacred to my imagination: it is dear to my heart. There is a real and deep foundation for these feelings in human nature: they arise spontaneously in the bosom of man, and we see their expression and their power in the customs of all nations, savage as well as civilized, and in the conduct of all men, the most ignorant and uncultivated no less than the most intelligent and refined. It has been the policy of society to foster these sentiments. It has been conceived that the sanctity which attaches to the dead, is reflected back in a profounder feeling of respect for the living; that the solemnity with which death is regarded elevates, in the general estimation, the value of life; and that he who cannot approach the mortal remains of a fellow-creature without an emotion of awe, must regard with horror every thing which places in danger the life of a human being. Religion has contributed indirectly, but powerfully, to the strength and perpetuity of these impressions; and superstition has availed herself of them to play her antics and to accomplish her base and malignant purposes. It is not the eradication of these feelings that can be desired, but their control: it is not the extinction of these natural and useful emotions that is pleaded for, but that they should give way to higher considerations when these exist. Veneration for the dead is connected with the noblest and sweetest sympathies of our nature: but the promotion of the happiness of the living is a duty from which we can never be exonerated.

In ancient times the voice of reason could not be heard. Superstition, and customs founded on superstition, excited an influence which was neither to be resisted nor evaded. Dissection was then regarded with horror. In the warm countries of the East the pursuit must have been highly offensive and even dangerous, and it was absolutely incompatible with the notions and ceremonies universally prevalent in those days. The Jewish tenet of pollution must have formed an insuperable obstacle to the cultivation of anatomy amongst that people. By the Egyptians every one who cut open a dead body was regarded with inexpressible horror. The Grecian philosophers so far overcame the prejudice as occasionally to engage in the pursuit, and the first dissection on record was one made by Democritus of Abdera, the friend of Hippocrates, in order to discover the course of the bile. The Romans contributed nothing to the progress of the art: they were content with propitiating the deities who presided over health and disease. They erected on the Palatine Mount a temple to the goddess Febris, whom they worshipped from a dread of her power. They also sacrificed to the goddess Ossipaga, who, it seems, presided over the growth of the bones, and to another styled Carna, who took care of the viscera, and to whom they offered bean-broth, and bacon, because these were the most nutritious articles of diet. The Arabians adopted the Jewish notion of pollution, and were thus prohibited by the tenets of their religion from practising dissection. Abdollaliph, who flourished about the year 1200, a man of learning and a teacher of anatomy, never saw and never thought of a human dissection. In order to examine and demonstrate the bones, he took his students to burial-grounds and earnestly recommended them instead of reading books, to adopt that method of study: yet he seems to have had no conception that the dissection of a recent subject might be a still better method of learning. Christians were equally hostile to dissection. Pope Boniface the VIIIth issued a bull prohibiting even the maceration and preparation of skeletons. The priests were the only physicians, and so greatly did they abuse the office they assumed, that the evil at length became too intolerable to be borne. The church itself was obliged to prohibit the priesthood from interfering with the practice of medicine. All monks and canons who applied themselves to physic, were threatened with severe penalties, and all bishops, abbots, and priors who connived at their misconduct were ordered to be suspended from their ecclesiastical functions. But it was not till three hundred years after this interdiction, that, by a special bull which permitted physicians to marry, their complete separation from the clergy was effected.

In the 14th century, Mundinus, professor at Bologna, astonished the world by the public dissection of two human bodies. In the 15th century, Leonardo da Vinci contributed essentially to the progress of the art, by the introduction of anatomical plates which were admirably executed. In the 16th century, the Emperor, Charles the Vth, ordered a consultation to be held by the divines of Salamanca, to determine whether it was lawful, in point of conscience, to dissect a dead body in order to learn its structure. In the 17th century, Cortesius, professor of anatomy at Bologna, and afterwards professor of medicine at Messina, had long begun a treatise on practical anatomy which he had an earnest desire to finish, but so great was the difficulty of prosecuting the study even in Italy, that in 24 years he could only twice procure an opportunity of dissecting a human body, and even then with difficulty and in a hurry; whereas, he had expected to have done so, he says, once every year, according to the custom of the famous academies of Italy. In Muscovy, until very lately, both anatomy and the use of skeletons were positively forbidden; the first as inhuman, and the latter as subservient to witchcraft. Even the illustrious Luther was so biassed by the prejudices of his age, that he ascribed the majority of diseases to the arts of the devil, and found great fault with physicians when they attempted to account for them by natural causes. England acquired the bad fame of being the country of witches, and opposed almost insuperable obstacles to the cultivation of anatomy. Even at present the prejudices of the people on this subject are violent and deeply rooted. The measure of that violence may be estimated by the degree of abhorrence with which they regard those persons who are employed to procure the subjects necessary for dissection. In this country there is no other method of obtaining subjects but that of exhumation; aversion to this employment may be pardoned; dislike to the persons who engage in it is natural, but to regard them with detestation, to exult in their punishment, to determine for themselves its nature and measure, and to endeavour to assume the power of inflicting it with their own hands, is absurd. Magistrates have too often fostered the prejudices of the people, and afforded them the means of executing their vengeance on the objects of their aversion. The press, with a few honourable exceptions, has uniformly allied itself with the ignorance and violence of the vulgar, and has done every thing in its power to inflame the passions, which it was its duty to endeavour to soothe. It is notorious that the winter before last there was scarcely a week in which many of the papers did not contain the most exaggerated and disgusting statements; the appetite which could be gratified with such representations was sufficiently degraded; but still more base was the servility which could pander to it.

As one among many of the cases which illustrate this bad feeling, we may refer to that of Samuel Clark, who was indicted at the Essex Quarter Sessions, in January 1824, for feloniously stealing at Little Leighs, on the 26th of December, a woman's shift, a bed-gown, a night-cap, and a pair of cotton stockings, the property of James Chinnery. It appeared in evidence, that a young woman the wife of a labouring man named James Chinnery, had been buried in Little Leighs Church-yard, on Sunday, the 21st of December. Previous to her death she expressed a wish to be interred in a night-cap, shift, bed-gown, and cotton stockings, and her request had been complied with. The body was discovered on the morning of the 26th, in a ditch near the churchyard. A few rods from this spot was found a horse yoked to a chaise cart and tied to a tree. It appeared that "the box under the chaise cart was calculated to hold a couple of human bodies, when rolled up; and on examining it, a most offensive odour proceeded from it, as if it had been recently used in the prisoner's *unhallowed* occupation." The prisoner owned this horse and cart, and this is the whole of the evidence, at least, as stated in the report of the trial, which implicated him in the robbery of the grave. Under these circumstances, the counsel for the prisoner submitted to the Court that there was no case to go to the jury on three grounds: first, that there was no proof of any asportation of the articles alleged to have been stolen; secondly, that supposing the asportavit made out, the prisoner could not be convicted of this offence, unless it was manifest that he had a felonious intention of taking the clothes and converting them to his own use; and thirdly, that, at all events, there was no evidence upon which the jury could safely be called upon to act, so as to implicate him in the alleged offence. The counsel for the prosecution in answer urged, first, that the finding of the body naked, after proof that it had been interred in the clothes mentioned in the evidence, was sufficient proof of asportation; and that even stripping the body without removing the clothes out of the grave, was, in law, enough to support the indictment: secondly, that although the primary intention of the prisoner might be, to steal the body only, yet, if the clothes were taken, the law would construe them to have been feloniously taken; that it might as well be said that although a man's intention might be to steal a valuable jewel, yet it was no offence to take the casket in which it was contained: and thirdly, that whether the defendant was the party to whom guilt was imputed, was a question solely for the consideration of the jury. On the prisoner's counsel insisting that his objections had not been answered, the Chairman overruled the two first objections, and then summed up the evidence, on which the jury, after deliberating a few minutes, found the prisoner *Guilty*. The verdict, it is recorded, *was received by the auditory with a general expression of pleasure.* The Court after animadverting in strong terms on the *abominable* offence of which the prisoner had been found guilty, said they were determined that he should not have an opportunity of pursuing his *odious* trade in this country, at least for some years, and *therefore* sentenced him to be transported for seven years. The account of this case is taken from the report of the trial contained in the Globe and Traveller newspaper of Jan. 20, 1824; a paper honorably distinguished for its endeavours to enlighten the public mind on this subject, not to foster its prejudices.

In this case there was no sufficient evidence to convict the prisoner of the alleged offence: even if that evidence had been perfectly satisfactory, the punishment inflicted was unjust: the circumstance essential to constitute the felony did not exist: the Chairman, with an ignorant and vulgar mind, stretched the law to gratify ignorant and vulgar prejudice: he relied upon the public feeling for protection in the illegal exertion of his power: he administered the law badly: he endeavoured to justify his conduct by loading the prisoner with odious epithets, and he did not miscalculate the feeling of his auditory; they witnessed the transaction "with a general feeling of pleasure." This case exhibits but too faithfully, the spirit often displayed both by the magistracy and the people.

Half a century ago there was in Scotland no difficulty in obtaining the subjects which were necessary to supply the schools of anatomy. The consequence was, that medicine and surgery suddenly assumed new life—started from the torpor in which they had been spell-bound—and made an immediate, and rapid, and brilliant progress. The new seminaries constantly sent into the world men of the most splendid abilities, at once demonstrating the excellence of the schools in which they were educated, and rendering them illustrious. Pupils flocked to them from all quarters of the globe, and they essentially contributed to that advancement of science which the present age has witnessed. In the 19th century the good people of Scotland, that intelligent, that cool and calculating, that most reasonable and thinking people, have thought proper to return to the worst feeling and the worst conduct of the darkest periods of antiquity. There is at present no offence whatever which seems to have such power to heat, and to exalt into a kind of torrent, the blood which usually flows so calmly and sluggishly in the veins of a Scotchman. The people of 1823 (to compare great things with small) emulate the spirit of those of their forefathers who "*were out in the forty-five;*" the object, to be sure, is somewhat different, but it is amusing to see the intensity and seriousness of the excitement. About twelve months ago an honest farmer of the name of Scott, who resides at Linlithgow, apprehended a poor wight who was pursuing his vocation, we presume, in the churchyard of that place: and this service appeared so meritorious to the people in his neighbourhood, that they absolutely presented him with a piece of plate. In the winter sessions of 1822-3, a body was discovered on its way to the lecture-room of an anatomist in Glasgow, and, in spite of the exertions of the police, aided by those of the military, this gentleman's premises and their contents, which were valuable, were entirely destroyed by the mob. For some time after this achievement, it was necessary to station a military guard at the houses of all the medical professors in that city. In the justiciary court at Stirling, while the judges were proceeding to the court, the procession was assaulted with missiles; several persons were injured, and it was necessary to call in the protection of a military force. The object of the mob was, to inflict summary punishment on a man who was about to be tried for the exhumation of a body. We happen to know that the most disgraceful proceedings were some time ago instituted in that town against a young gentleman of respectable family and connections, who was in fact expatriated, and whose prospects in life were entirely changed, if not ruined, because he had too much honour to implicate his instructors in a transaction which would have put them to inconvenience, and in which they had engaged from a desire faithfully to discharge their duty to their pupils. Within the last five years three men were lodged in the county gaol at Haddington, charged with a trespass in the churchyard of that town. So enraged was the mob against them, that an attempt was made to force the gaol in order to get at them. On their way to the court the men were again attacked, forced from the carriage, and severely maimed. After examination they were admitted to bail; but, when set at liberty, they were assailed with more violence than ever, and were nearly killed. On the 29th of June, 1823, being Sunday, a most extraordinary outrage was perpetrated in the streets of Edinburgh. A coach containing an empty coffin and two men, was observed proceeding along the south bridge. The people suspecting that it was intended to convey a body taken from some churchyard, seized the coach. It was with difficulty that the police protected the men from the assaults of the populace: the coach they had no power to preserve. The horses were taken from it, and together with the coffin, after having been trundled a mile and a half through the streets of the city, it was deliberately projected over the steep side of the mound, and smashed into a thousand pieces. The people, following it to the bottom, kindled a fire with its fragments, and surrounded it like the savages in Robinson Crusoe, till it was entirely consumed. In this case there was no foundation for their suspicions. The coffin was intended to have conveyed to his house in Edinburgh the body of a physician who that morning had died in a cottage in the neighbourhood. A similar assault was some time ago made on two American gentlemen, who went to visit the Abbey of Linlithgow after nightfall. The churchyards of the "gude Scots" are now strictly guarded by men and dogs; watch-towers are erected within the grounds, and *mort-safes* as they are called, that is to say, strong iron frames are deposited in the ground over the graves. These people sometimes declare that they will put an end to anatomy, and certainly they are succeeding in the accomplishment of this menace as rapidly as they can well desire. The average number of medical students in Edinburgh is 700 each session. For several years past the difficulty of procuring subjects in that place has been so great, that out of all that number, not more than 150 or 200 have ever attempted to dissect; and even these have latterly been so opposed in their endeavours to prosecute their studies that many of them have left the place in disgust. We have been informed by a friend, that he alone was personally acquainted with twenty individuals who retired from it at the beginning of the session, and who went to pursue their studies at Dublin, and we know that vast numbers followed their example at the end of the winter course. The medical School at Edinburgh, in fact, is now subsisting entirely on its past reputation; in the course of a few years it will certainly be at an end, unless the system be changed. Let those who have the prosperity of the university at heart, and who have the power to protect it, consider this before it is too late: they may be assured it is no idle prediction; for we give them notice that it is at this moment the universal opinion and the current language of every well-informed medical man in England.

An excellent system of anatomical plates, which has been well received by the profession, has lately been published by Mr. Lizars, a lecturer on anatomy and physiology, in Edinburgh. This gentleman states that he has been induced to undertake the work, in order to obviate the most fatal consequences to the public; as far, at least, as a reference to art, instead of nature, is capable of obviating those consequences. He affirms, that the difficulty of obtaining instruction from nature has risen to such a pitch, owing to the extraordinary severity exercised by the legal authorities of the kingdom against persons employed in procuring subjects for dissection, as to threaten the ultimate destruction of medical and anatomical science. In his preface to the Second Part of his work, he apologises to his readers for dividing one portion of it from another, with which it ought to have been connected; but states that he has been compelled to do so from the prejudices of the place, which prevented him for upwards of five months, from procuring a subject from which he might make his drawings. "In place of living," he says, "in a civilized and enlightened period, we appear as if we had been thrown back some centuries into the dark ages of ignorance, bigotry, and superstition. Prejudices, worthy only of the multitude, have been conjured up and appealed to, in order to call forth popular indignation against those whose business it is to exhibit demostratively the structure of the human body, and the functions of its different organs. The public journals, from a vicious propensity to pander to the vulgar appetite for excitement, have raked up and industriously circulated stories of the exhumation of dead bodies, tending to exasperate and inflame the passions of the mob; and persons, who, by their own showing, are friendly to the interests of science, have, in the excess of their zeal that bodies should remain undisturbed in their progress to decomposition, laboured to destroy in this country, that art, whose province it is, to free living bodies from the consequences inseparable from accident and disease. And, which is worst of all, the prejudices of the multitude have been confirmed and rendered inveterate by the proceedings in our courts of justice, which have visited with the punishment due only to felons, the unhappy persons necessarily employed, in the present state of the law, in procuring subjects for the dissecting room."

He then goes on to state that, until anatomy be publicly sanctioned in Edinburgh, the school of medicine there can never flourish; that, upon the present system, young men obtain a degree or a diploma after a year or two of grinding, that is, of learning by rote the answers to the questions which the examiners are in the habit of putting to the candidates; that, ignorant of the very elements of their profession, numbers of persons thus educated, annually go to the East and West Indies, and to the army and navy, where they have the charge of hundreds of their suffering fellow-creatures, to whom they are in fact the instruments of cruelty and murder. In the preface to the Fourth Part, he adds, that when Part II. was published, in the early part of the session, he took occasion to express his sorrow for the degraded state of his profession, and the threatened ruin of the Medical School of his native place, owing to the scarcity of subjects: that, for doing this, he has incurred considerable censure; that he regrets that he has yet found no reason to alter his opinion, for the winter session is now near its conclusion, and, he candidly declares, that such has been the scarcity of material, that *no teacher of anatomy or surgery has been able either to follow the regular plan of his course, or to do his duty to his pupils;* the consequence of which has been, that many of the students have left the school in disgust, and gone either to Dublin or Paris; while a still greater number, deprived of the means of dissecting, have contented themselves with lectures or theories, and with grinding; and entered on the practice of their profession ignorant of its fundamental principles.

Much of this opposition on the part of the people arises from the present mode of procuring subjects. Fortunately, there is in Great Britain no custom, no superstition, no law, and we may add, no prejudice against anatomy itself. There is even a general conviction of its necessity; there may be a feeling that it is a repulsive employment, but it is commonly acknowledged that it must not be neglected. The opposition which is made, is made, not against anatomy, but against the practice of exhumation: and this is a practice which ought to be opposed. It is in the highest degree revolting; it would be disgraceful to a horde of savages; every feeling of the human heart rises up against it: so long as no other means of procuring bodies for dissection are provided, it must be tolerated; but, in itself, it is alike odious to the ignorant and the enlightened, to the most uncultivated and the most refined.

But the capital objection to this practice is, that it necessarily creates a crime, and educates a race of criminals. Exhumation is forbidden by the law. It is, indeed, prohibited by no statute, either in England or in Scotland: in both it is an offence punishable at common law. There is a statute of James the First, which makes it felony to steal a dead body for the purpose of witchcraft; there is none against taking a body for the purpose of dissection. In the case of the King against Lynn (1788), the Court decided that the body being taken for the latter purpose, did not make it less an indictable offence; and that it is without doubt cognizable in a criminal court, because it is an act "highly indecent; at the bare idea of which nature revolts." It is punishable, therefore, by fine or imprisonment, or both: in Scotland it is also punishable by whipping, and even by transportation.

In Great Britain the law against the practice of exhumation is not allowed to slumber. There may be other cases which have not come to our knowledge; but we have ascertained that there have been fourteen convictions for England alone during the last year. The punishments inflicted have been imprisonment for various periods, with fines of different sums. The fines in general are heavy, considering the poverty of the offenders. Several persons are, at this moment, suffering these penalties; among others, there is now in the gaol of St. Alban's, a man who was sentenced for this offence to two years' imprisonment and a fine of £20. The period of his confinement has expired some time; but he still remains in prison, on account of his inability to pay the fine. Since the passing of the new Vagrant Act, it has been the common practice to commit these offenders to hard labour for various periods. Very lately, two men, convicted of this offence, were sent to the Tread-Mill, in Cold Bath Fields; one of whom died in one month after his commitment. It is an error to suppose that these punishments operate to prevent exhumation: their only effect is to raise the price of subjects: a little reflection will show that they can have no other operation. At present, exhumation is the only method by which subjects for dissection can be procured; but subjects for this purpose must be procured; and be the difficulties what they may, will be procured: diseases will occur, operations must be performed, medical men must be educated, anatomy must be studied, dissections must go on. Unless some other means for affording a supply be adopted; whatever be the law or the popular feeling, neither magistrates, nor judges, nor juries, will, or can put an entire stop to the practice. It is one which, from the absolute necessity of the case, must be allowed. What is the consequence? So long as the practice of exhumation continues, a race of men must be trained up to violate the law. These men must go out in company for the purpose of nightly plunder, and plunder of the most odious kind, tending in a peculiar and most alarming measure to brutify the mind, and to eradicate every feeling and sentiment worthy of a man. This employment becomes a school in which men are trained for the commission of the most daring and inhuman crimes. Its operation is similar, but much worse than the nightly banding to violate the game laws, because there is something in the violation of the grave, which tends still more to degrade the character and to harden the heart. This offence is connived at, nay, it is rewarded; these men are absolutely paid to violate the law; and paid by men of reputation and influence in society. The transition is but too easy to the commission of other offences in the hope of similar connivance, if not of similar reward.

It is an odious thing that the teachers of anatomy should be brought into contact with such men: that they should be obliged to employ them, and that they should even be in their power, which they are to such a degree that they are obliged to bear with the wantonness of their tyranny and insult. All the clamour against these men, all the punishment inflicted on them, only operate to raise the premium on the repetition of their offence. This premium the teachers of anatomy are obliged to pay, which these men perfectly understand, who do not at all dislike the opposition which is made to their vocation. It gives them no unreasonable pretext for exorbitancy in their demands. In general they are men of infamous character; some of them are thieves, others are the companions and abettors of thieves; almost all of them are extremely destitute. When apprehended for the offence in question, the teachers of anatomy are obliged to pay the expenses of the trial, and to support their families while they are in prison;

whence the idea of immunity is associated, in these men's minds, with the violation of the law; and when they do happen to incur its penalties, they practically find that they and their families are provided for, and this provision comes to them in the shape of a reward for the commission of their offence. The operation of such a system on the minds of the individuals themselves is exceedingly pernicious, and is not a little dangerous to the community.

Moreover, by the method of exhumation, the supply after all is scanty; it is never adequate to the wants of the schools; it is of necessity precarious, and it sometimes fails altogether for several months. But it is of the utmost importance that it should be abundant, regular, and cheap. The number of young men who come annually to London for the purpose of studying medicine and surgery, may be about a thousand. Their expenses are necessarily very considerable while in town; they have already paid a large sum for their apprenticeship in the country; the circumstances of country practitioners, in general, can but ill afford protracted expenses for their sons in London; few of them stay a month longer than the time prescribed by the College of Surgeons. But the short period they spend in London is the only time they have for acquiring the knowledge of their profession. If they misspend these precious hours, or if the means of employing them properly be denied them, they must necessarily remain ignorant for life. After they leave London they have no means of dissecting. We have seen that it is by dissecting alone, that they can make themselves acquainted even with the principles of their art; that without it they cannot so much as avail themselves of the opportunities of improvement, which experience itself may offer, nor, without the highest temerity, perform a single operation. We have seen that occasions suddenly occur, which require the prompt performance of important and difficult operations; we have seen that, unless such operations are performed immediately, and with the utmost skill, life is inevitably lost. In many such cases there is no time to send for other assistance. If a country practitioner (and most of these young men go to the country) be not himself capable of doing what is proper to be done, the death of the patient is certain. We put it to the reader to imagine what the feelings of an ingenuous young man must be, who is aware of what he ought to do, but who is conscious that his knowledge is not sufficient to authorise him to attempt to perform it, and who sees his patient die before him, when he knows that he might be saved, and that it would have been in his own power to save him, had he been properly educated. We put it to the reader to conceive what his own sensations would be, were an ignorant surgeon, with a rashness more fatal than the criminal modesty of the former, to undertake an important operation. Suppose it were a tumour, which turned out to be an aneurism; suppose it were a hernia, in operating on which the epigastric artery were divided, or the intestine itself wounded; suppose it were his mother, his wife, his sister, his child, whom he thus saw perish before his eyes, what would the reader then think of the prejudice which withholds from the surgeon that information without which the practice of his profession is murder?

The study of anatomy is a severe and laborious study; the practice of dissection is on many accounts highly repulsive: it is even not without danger to life itself.* To men of clear understandings, to those especially of a philosophical turn of mind, the pursuit is its own reward; they are so fully satisfied that the more it is cultivated the more satisfaction it will afford, that they need no stimulus to induce them to undergo the drudgery. But this is by no means the case with ordinary minds. The fatigue and disgust of the dissecting-room are appalling to them, and they need the stimulus of necessity to urge them to the task. Instead of throwing obstacles in the way of dissection, it is a duty which the public owe to themselves to afford every possible facility to its practice, and to hold out to every member of the profession the most powerful inducements to engage in it, by rewarding with confidence those who cultivate anatomy, by making excellence in anatomy indispensable to all offices in dispensaries and hospitals, and by thus rendering it impossible for any one who is ignorant of anatomy, to obtain rank in his profession. When a candidate presents himself for a diploma in Denmark, in his first trial he is put into a room with a subject, a case of instruments, and a memorandum, and informed that he is to display the anatomy of the face and neck, or that of the upper extremity or that of the lower extremity: that by the anatomy is to be understood, the blood-vessels, nerves, and muscles; and that as soon as he has accomplished his task, the professors will attend his summons to judge of his attainments. These professors are the true examiners!

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* A winter never passes without proving fatal to several students who die from injuries received in dissection.

We shall have entered into the discussion of this subject to little purpose, if we have not produced in the minds of our readers a deep conviction, that anatomy ought to form an essential part of medical education; that anatomy cannot be studied without the practice of dissection; that dissection cannot be practised without a supply of subjects, and that the manner in which that supply is obtained in England is detestable and ought immediately to be changed.

What we would beg leave to suggest as likely to remedy the evils of the existing system, or at least as worth the experiment, is an Act of Parliament embodying the following provisions:

1. That if any person leave his own body for dissection, it shall be lawful for his executors to carry that part of his will into execution.
2. That it shall be lawful to appropriate to dissection the bodies of all persons who are buried at the public expense.
3. That the dissection of all such bodies shall be completed within a specified time, say three weeks; at the end of which period, the remains shall be buried with funereal rites.
4. That no stranger, no person who dies suddenly, shall be appropriated to dissection, at least within a certain number of days.
5. Other exceptions to be here inserted, which justice, prudence, or the general feeling may require.

All the medical schools on the continent are supplied with subjects by public authority. The following account of the mode in which those of Paris in particular are supplied, has been obtained from the gentleman who is at the head of the anatomical department in that city. It is stated, 1. That the faculty of medicine at Paris is authorised to take from the civil hospitals, from the prisons, and from depôts of mendicity, the bodies which are necessary for teaching anatomy. 2. That a gratuity of eight pence is given to the attendants in the hospitals for each body. 3. That upon the foundation by the National Convention, of schools of health, the statutes of their foundation declare, that the subjects necessary for the schools of anatomy shall be taken from the hospitals; and that since this period, the council of hospitals, and the prefect of police, have always permitted the practice. 4. That M. Breschet, chief of the anatomical department of the faculty of Paris, sends a carriage daily to the different hospitals, which brings back the necessary number of bodies: that this number has sometimes amounted to 2,000 per annum, for the faculty only, without reckoning those used in L'Hòpital de la Pitié, but that since the general attention which has recently been bestowed upon pathologic anatomy, numbers of bodies are opened in the civil and military hospitals, and that the faculty seldom obtain more than 1,000 or 1,200. 5. That, besides the dissections by the faculty of medicine, and those pursued in L'Hôpital de la Pitié, theatres of anatomy are opened in all the great hospitals, for the pupils of those establishments: that in these institutions anatomy is carefully taught, and that pupils have all the facilities for dissection that can be desired. 6. That the price of a body varies from four shillings to eight shillings and sixpence. 7. That after dissection, the bodies are wrapt in cloths, and carried to the neighbouring cemetery, where they are received for ten pence. 8. That the practice of exhumation is abolished: that there are insurmountable obstacles to the return to that system, and that bodies are never taken from burial-grounds, without an order for exhumation, which is given only when the tribunals require it for the purpose of medico-legal investigations. 9. That though the people have an aversion to the operations of dissection, yet they never make any opposition to them, provided respect be paid to the laws of decency and salubrity, on account of the deep conviction that prevails of their utility. 10. That the relatives of the deceased seldom or never oppose the opening of any body, if the physicians desire it. That all the medical students in France, with scarcely any exception, dissect, and that that physician or surgeon who is not acquainted with anatomy, is universally regarded as the most ignorant of men.

To the other parts of the plan proposed above, for supplying the anatomical schools in Great Britain, there appears to be no objections whatever. No one can object to such a disposal of the bodies of those who die in prisons; no one can reasonably object to such a disposal of the bodies of those who die in poor-houses. These persons are pensioners upon the public bounty: they owe the public a debt: they have been supported by the public during life; if, therefore, after death they can be made useful to the public, it is a prejudice, not a reason,—it is an act of injustice, not the observance of a duty, which would prevent them from becoming so. It is true that many of these persons are honest and respectable; and have been reduced to indigence by misfortune: were they all so it would not alter the state of the argument. Some concession and co-operation on the part of the public, for this great public object, is indispensable, without which nothing can be done: but if any concession be made, it can be made with respect to this class of persons better than any other, because it can be made with less violation of public feeling. Nor is any indignity either intended or offered to these persons. They are appropriated to this service not because they are poor, but because they are friendless; because, that is, no persons survive them who take such an interest in their fate as to be rendered unhappy by this disposal of their remains. That they are without friends is no good reason why their memory should be treated with indignity; but it is a good reason, it is the best possible reason why they should be selected for this public service. Poverty, it is true, is a misfortune: poverty, it is true, has terror and pain enough in itself: no legislature ought by any act to increase its wretchedness; but the measure here proposed is pregnant with good to the poor, and would tend more than can be estimated to lessen the misery of their condition. For it would give knowledge to the lowest practitioners of the medical art; that is, to the persons who are at present lamentably deficient, and into whose hands the great bulk of the poor fall. And, after all, the true question is, whether the surgeon shall be allowed to gain knowledge by operating on the bodies of the dead, or driven to obtain it by practising on the bodies of the living. If the dead bodies of the poor are not appropriated to this use, their living bodies must be—and will be. The rich will always have it in their power to select, for the performance of an operation, the surgeon who has signalized himself by success: but that surgeon, if he have not obtained the dexterity which ensures success, by dissecting and operating on the dead, must have acquired it by making experiments on the living bodies of the poor. There is no other means by which he can possibly have gained the necessary information. Every such surgeon who has attained deserved eminence, must have risen to it through the suffering which he has inflicted, and the death which he has brought upon hundreds of the poor. What would be the immediate and constant effect of an abolition of the practice of dissecting the dead? It would be to convert poor-houses and public hospitals into so many schools where the surgeons, by practising on the living bodies of the poor, would learn to operate on those of the rich with safety and dexterity. Thus the poor would be tortured, and many of them would be put to death in order that the rich might be saved from pain and danger. This would be the certain and inevitable result—this would indeed be to treat this class of the people with real indignity and horrible injustice; and proves how possible it is to show an apparent consideration for the poor, and yet practically to abuse them in the most cruel manner.

The plan now proposed for remedying the evils which have been stated, would accomplish the object easily and completely: it would inflict no injury on any private individual: it would do no violence to the public feeling: it would render the dread of anatomy, as far as that dread were really operative, directly beneficial to the community: it would terminate at once the evils of the present system: it would put an end to the education of daring and desperate violators of the law: it would tranquillize the public mind: the dead would rest undisturbed: the sepulchre would be sacred, and all the horrors which the imagination connects with its violation would cease for ever.

We submit these observations to the calm and serious consideration of our countrymen. We address them especially to the members of our legislature. Upon the attention of the latter we would particularly urge this further consideration, the importance of which they well know how to estimate. In consequence of the difficulty of procuring subjects in England, every medical student in Great Britain who can possibly afford the time now goes to Paris to perfect himself in anatomy. Accordingly the number of English students in Paris is already immense: that number increases rapidly every year: it increases by the desertion of the schools in Edinburgh and London. The consequence is obvious, and will be surely and deeply felt in a few years. Anatomy will be neglected in England, and for this indispensable branch of knowledge England will become entirely dependent on France. There cannot be a doubt that there is good sense enough among the people of England to submit to whatever regulations may be necessary to prevent evils so serious and so fatal, provided such regulations are framed in a proper spirit, and observed with a due regard to decorum; and it is certain that those persons who co-operate to establish these regulations will ultimately receive, as they will deserve, the gratitude of their country.

FINIS.

C. ADLARD, PRINTER, BARTHOLOMEW CLOSE.